

**SONY®**

DIGITAL VIDEOCASSETTE PLAYER

**DNW-A22/A22P**



OPERATION MANUAL English

1st Edition (Revised 2)

Serial No. 10001 and Higher

## WARNING

**To prevent fire or shock hazard, do not expose the unit to rain or moisture.**

**To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.**



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Use an appropriate AC power cord meeting the power requirements of the unit. The unit is supplied with no AC power cord.

**WARNING:** THIS WARNING IS APPLICABLE FOR USA ONLY.

If used in USA, use the UL LISTED power cord specified below.  
DO NOT USE ANY OTHER POWER CORD.

Plug Cap	Parallel blade with ground pin (NEMA 5-15P Configuration)
Cord	Type SJT, three 16 or 18 AWG wires
Length	Less than 2.5 m (8 ft 3 in)
Rating	Minimum 10 A, 125 V

Using this unit at a voltage other than 120V may require the use of a different line cord or attachment plug, or both. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel.

### For the customers in Europe

This product with the CE marking complies with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European standards:

- EN60065: Product Safety
- EN55103-1: Electromagnetic Interference (Emission)
- EN55103-2: Electromagnetic Susceptibility (Immunity)

This product is intended for use in the following Electromagnetic Environment(s):

E1 (residential), E2 (commercial and light industrial), E3 (urban outdoors) and E4 (controlled EMC environment, ex. TV studio).

### For the customers in the USA

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

### For the customers in the United Kingdom

#### WARNING

#### THIS APPARATUS MUST BE EARTHED

#### IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Green-and-yellow:	Earth
Blue:	Neutral
Brown:	Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:  
The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol  $\perp$  or coloured green or green-and-yellow.

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.  
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

# Table of Contents

<b>Chapter 1</b> <b>Overview</b>	<b>1-1 Overview ..... 1-1</b> <b>1-2 Example System Configuration ..... 1-3</b>
<b>Chapter 2</b> <b>Location and Function of Parts</b>	<b>2-1 Control Panels ..... 2-1</b> 2-1-1 Upper Control Panel ..... 2-2 2-1-2 Lower Control Panel ..... 2-4 2-1-3 Subsidiary Control Panel ..... 2-8 <b>2-2 Connector Panel ..... 2-9</b>
<b>Chapter 3</b> <b>Preparations</b>	<b>3-1 Setup ..... 3-1</b> <b>3-2 Superimposed Character Information ..... 3-2</b> <b>3-3 Cassettes ..... 3-4</b> 3-3-1 Cassette Types ..... 3-4 3-3-2 Inserting and Ejecting Cassettes ..... 3-4
<b>Chapter 4</b> <b>Playback</b>	<b>4-1 Preparations for Playback ..... 4-1</b> <b>4-2 Playback Procedures ..... 4-2</b> 4-2-1 Normal Playback ..... 4-2 4-2-2 Playback in Jog Mode ..... 4-2 4-2-3 Playback in Shuttle Mode ..... 4-3 4-2-4 Playback Using the Capstan Override Function ..... 4-3
<b>Chapter 5</b> <b>Menu System</b>	<b>5-1 Menu System Configuration ..... 5-1</b> <b>5-2 Basic Menu ..... 5-1</b> 5-2-1 Items in the Basic Menu ..... 5-1 5-2-2 Basic Menu Operations ..... 5-3 <b>5-3 Extended Menu ..... 5-8</b> 5-3-1 Items in the Extended Menu ..... 5-8 5-3-2 Extended Menu Operations ..... 5-9
<b>Chapter 6</b> <b>Maintenance and Inspection</b>	<b>6-1 Removing a Cassette When Tape Slack Occurs ..... 6-1</b> <b>6-2 Head Cleaning ..... 6-1</b> <b>6-3 Moisture Condensation ..... 6-2</b> <b>6-4 Digital Hours Meter ..... 6-3</b>
<b>Appendix</b>	<b>Specifications ..... A-1</b>



# 1-1 Overview

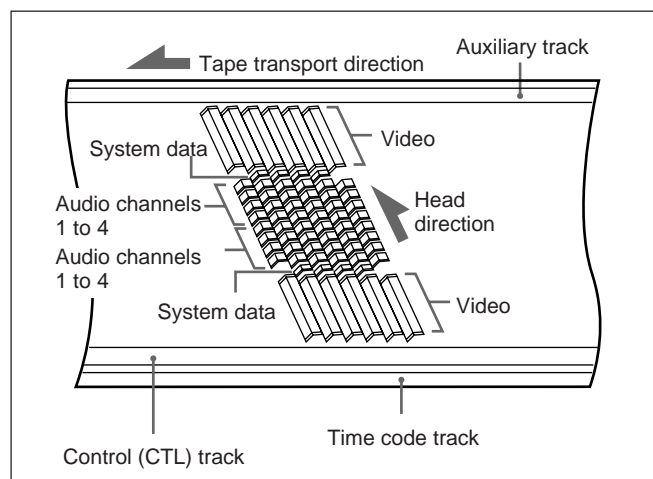
The DNW-A22/A22P (also referred to simply as the unit in this manual) is a videocassette player based on the Betacam SX format.

It can play tapes recorded in Betacam/Betacam SP format.

The following are some of the features of the unit.

## Betacam SX format

The Betacam SX format was developed as a digital version of the Betacam SP format, and is a digital VTR format supporting nonlinear editing systems and server systems. Compared with analog Betacam, the Betacam SX format reduces the tape speed to approximately one-half. For recording in Betacam SX format, the drum rotates at 75 revolutions per second, allowing two frames of video data and four channels of digital audio to be recorded in ten diagonal tracks. The longitudinal control and time code tracks are the same as in the analog Betacam format.



## Head configuration

In addition to playback heads for Betacam SX, the unit also has analog playback heads for Betacam SP.

## Digital signal processing

This unit processes digital signals conforming to 4:2:2 component digital D-1 format.

## High image quality, high audio quality, high reliability

Even with a low data rate, playback with high image quality and high audio quality is achieved. The unit also has a powerful error-correcting system.

## Data compression by interframe encoding

For the Betacam SX format, data is compressed by MPEG-2 interframe encoding conforming to 4:2:2 Profile @ Main level. The data rate is reduced by a factor of 10.

## Playback compatibility with Betacam/Betacam SP

The unit can play tapes recorded in Betacam/Betacam SP format. This makes for efficient use of existing material in Betacam/Betacam SP format.

## Wide range of output signals

The unit can output the following signals.

- Analog video (composite)
- Analog audio (L and R)

## Menu-based setup

Initial settings for the unit's operating condition, the interfaces with connected equipment, and so forth can be made by menu operations on the front panel of the unit.

## Wide range of indications

In addition to the LED display which shows the operating status and current settings of this unit and connected equipment, a fluorescent display is provided to show numerical values including time code, user bits, error messages, and setup menu information.

## 1-1 Overview

---

---

### Minimal maintenance

The design needs minimal maintenance, and requires no daily maintenance or checks. The drum and other components have reduced maintenance costs.

---

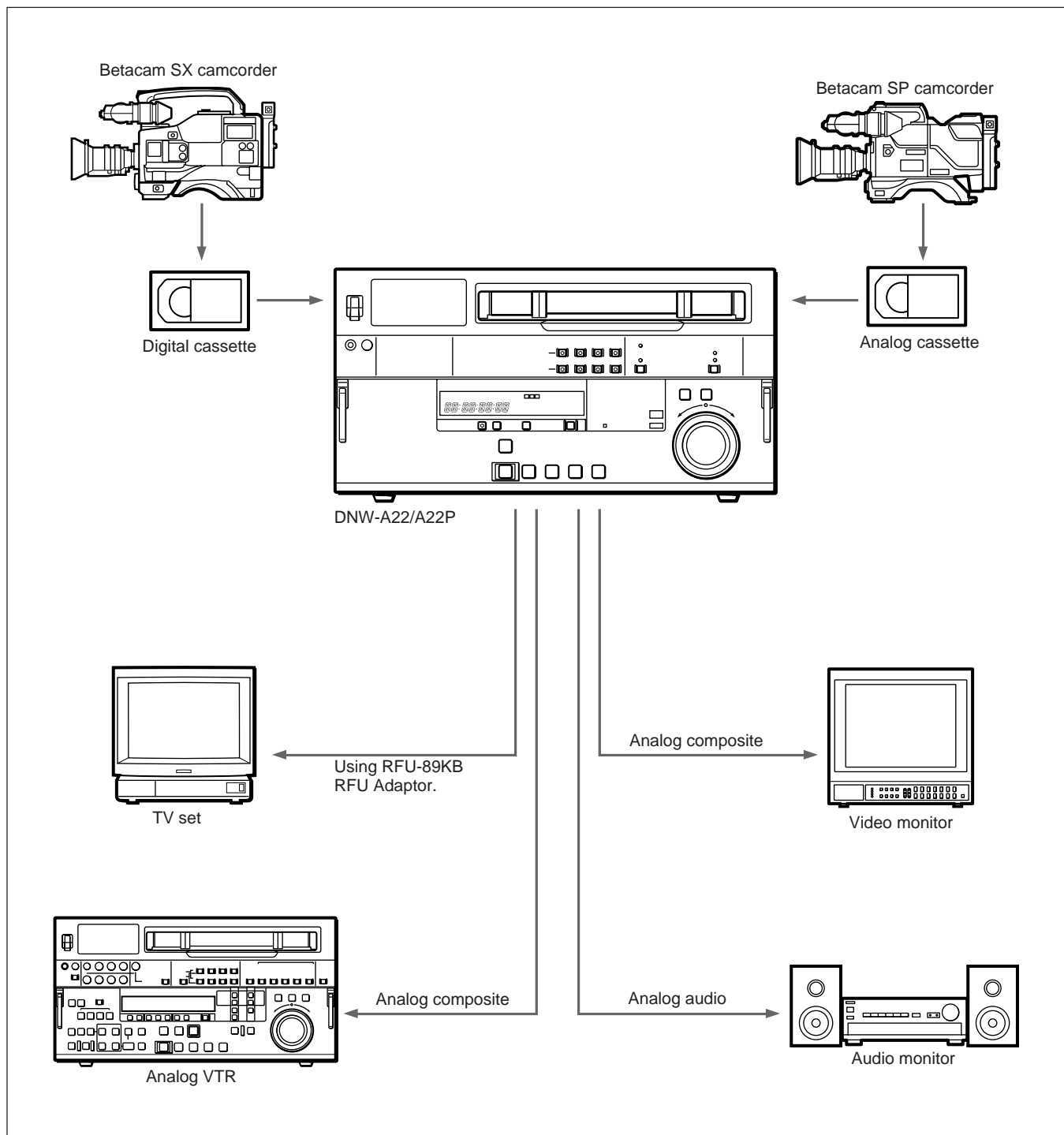
### Rack mounting

The unit can be mounted in an EIA standard 19-inch rack.

*For details of rack mounting, refer to the Maintenance Manual Part 1.*

## 1-2 Example System Configuration

The following conceptual diagram shows an example system configuration.



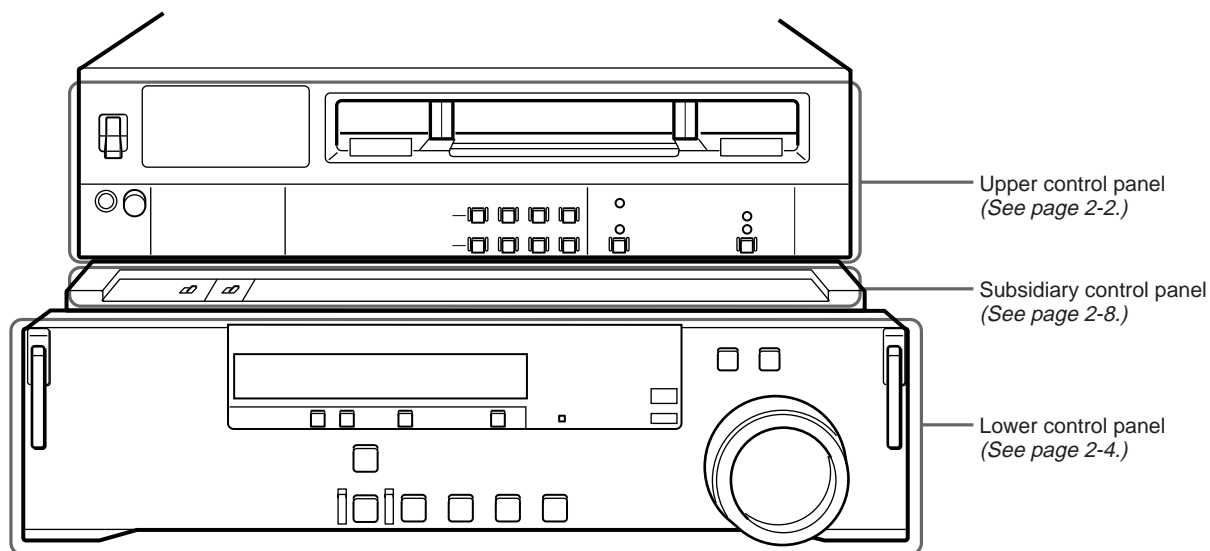




## 2-1 Control Panels

There are three front control panels, as follows:

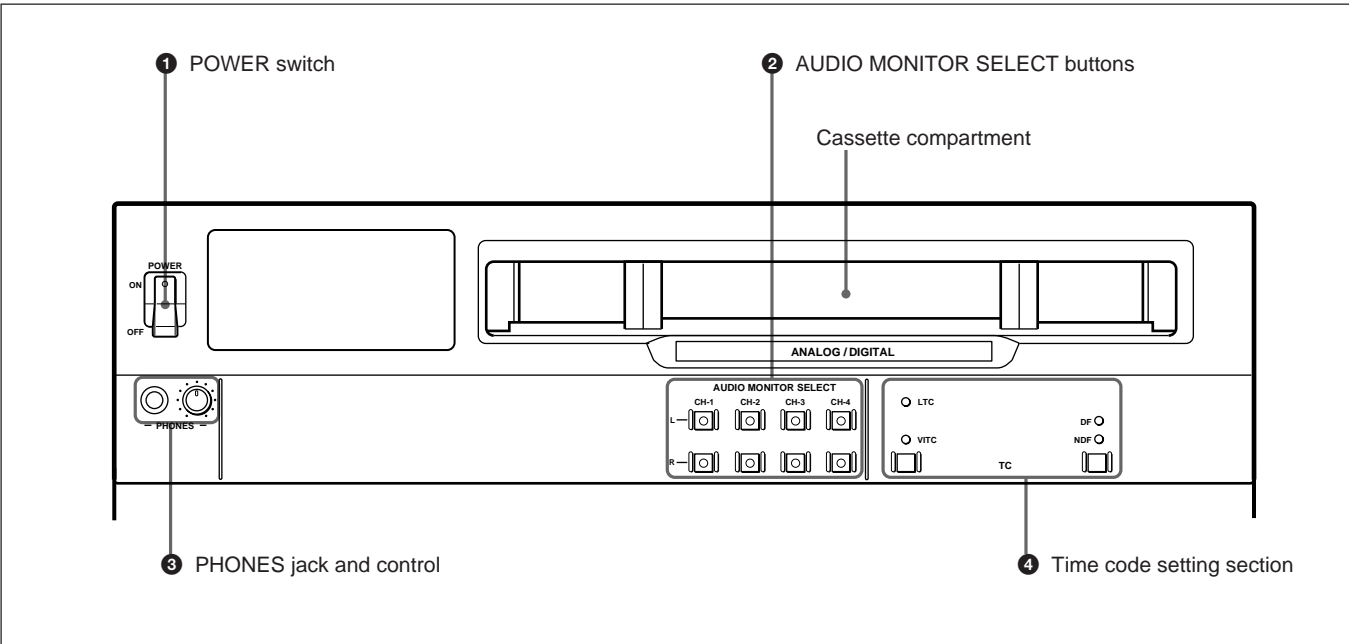
- Upper control panel
- Subsidiary control panel
- Lower control panel



To reveal the subsidiary control panel, pull the lower control panel forward.

## 2-1 Control Panels

### 2-1-1 Upper Control Panel



#### 1 POWER switch

This powers the unit on and off. When the unit is powered on, the fluorescent display in the lower control panel lights.

To power the unit off, press the side of the POWER switch marked "OFF".

#### 2 AUDIO MONITOR SELECT buttons

Press the buttons in the L and R rows to select the audio signal channels (channels 1 to 4, identified as CH-1 to CH-4) output from the MONITOR OUTPUT L and MONITOR OUTPUT R connectors.

You can press two or more buttons simultaneously in each row, turning them on, to monitor an output produced by mixing the selected channels.

### ③ PHONES jack and control

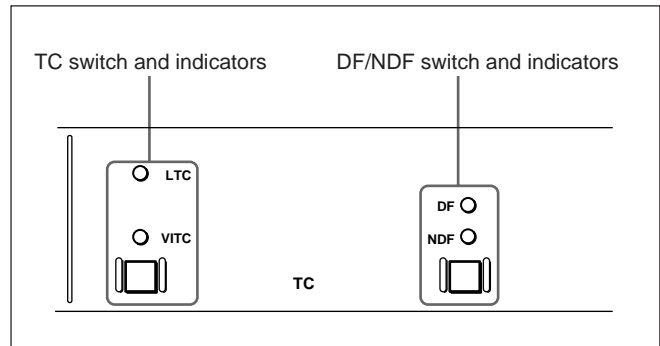
Connect stereo headphones with an impedance of 8 ohms, to monitor the sound during playback and editing.

The control knob adjusts the volume.

It is possible to make a setting so that the output volume from the MONITOR OUTPUT connectors is controlled simultaneously.

*In order that the output volume from the MONITOR OUTPUT connectors can be controlled simultaneously, an internal board switch setting is required. For details, refer to the Maintenance Manual Part 1.*

### ④ Time code setting section



#### TC (time code) switch and indicators

This switch selects LTC<sup>1)</sup> or VITC<sup>2)</sup> as the time code displayed in the lower control panel. The indicator corresponding to the selection lights.

#### Note

In this unit, VITC may not be displayed correctly except during normal playback.

#### DF/NDF (drop-frame/non-drop-frame) switch and indicators

In a 525/60 system, this switch selects the mode of advancing the time code generator and CTL counter.

**DF:** Drop-frame mode.<sup>3)</sup>

**NDF:** Non-drop-frame mode.<sup>3)</sup>

The indicator corresponding to the selection lights.

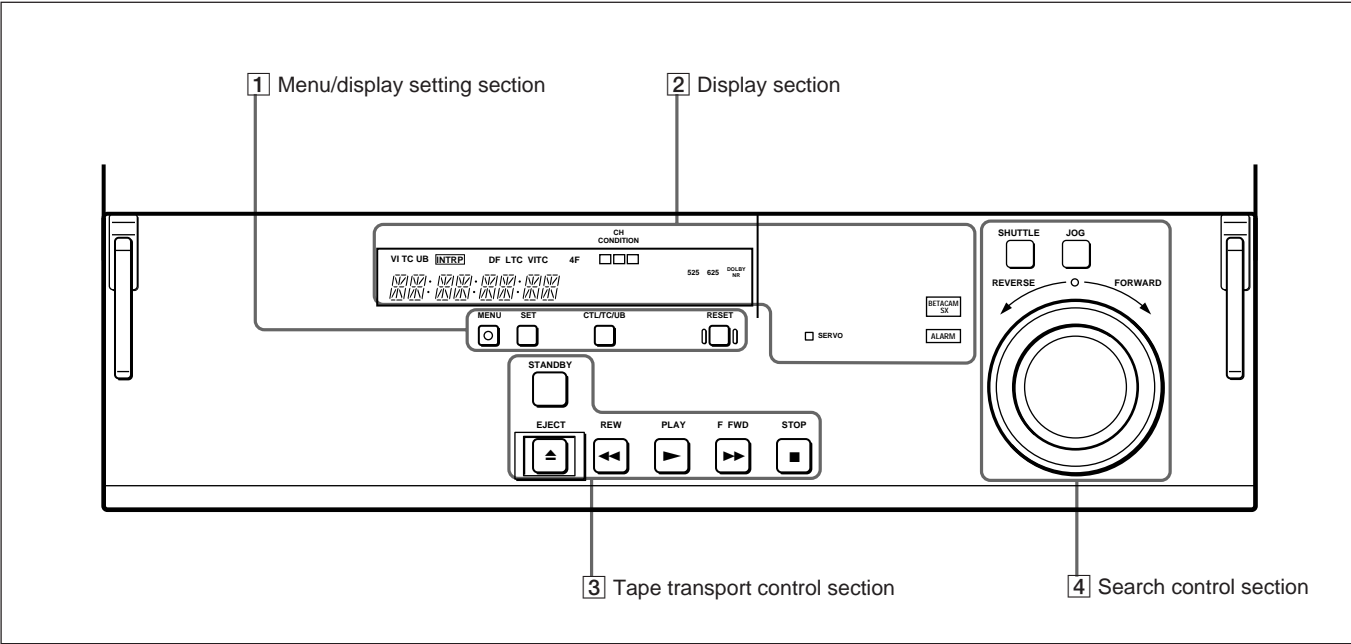
1) LTC: abbreviation of Longitudinal Time code. This time code is recorded on a longitudinal track on the tape. Reading is unreliable at low speeds, and not possible at all during still playback.

2) VITC: abbreviation of Vertical Interval Time code. This is inserted in the vertical blanking interval and recorded on the video tracks.

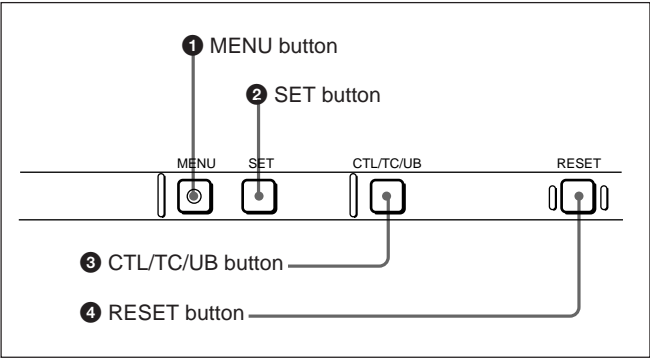
3) Drop-frame/non-drop-frame mode: In the NTSC system, the actual frame rate is 29.97 frames per second. There is therefore a cumulative discrepancy between the actual frame rate and the 30 frames per second rate on which time code is based. In drop-frame mode, except once every 10 minutes, the first two frames are skipped at the beginning of each minute to keep the time code values in step with actual elapsed time. In non-drop-frame mode, the correction is not carried out, and there is a discrepancy of about 86 seconds per day between actual elapsed time and time code values.

## 2-1 Control Panels

### 2-1-2 Lower Control Panel



#### 1 Menu/display setting section



##### 1 MENU button

Use this button for setup menu operations. Pressing this button, turning it on, displays setup menus in the fluorescent display of the display section **2**. Press the button once more to exit from the menu display.

*For details of setup menu operations, see Chapter 5, “Menu System”.*

##### 2 SET button

Use this button for setting time code and user bit values and in setup menu operations.

*For details of setup menu operations, see Chapter 5, “Menu System”.*

##### 3 CTL/TC/UB button

This selects the value displayed in the fluorescent display in the following sequence: CTL, TC, UB. As the display changes, the corresponding indicators over the fluorescent display also show the status.

Time code display value selection and display contents

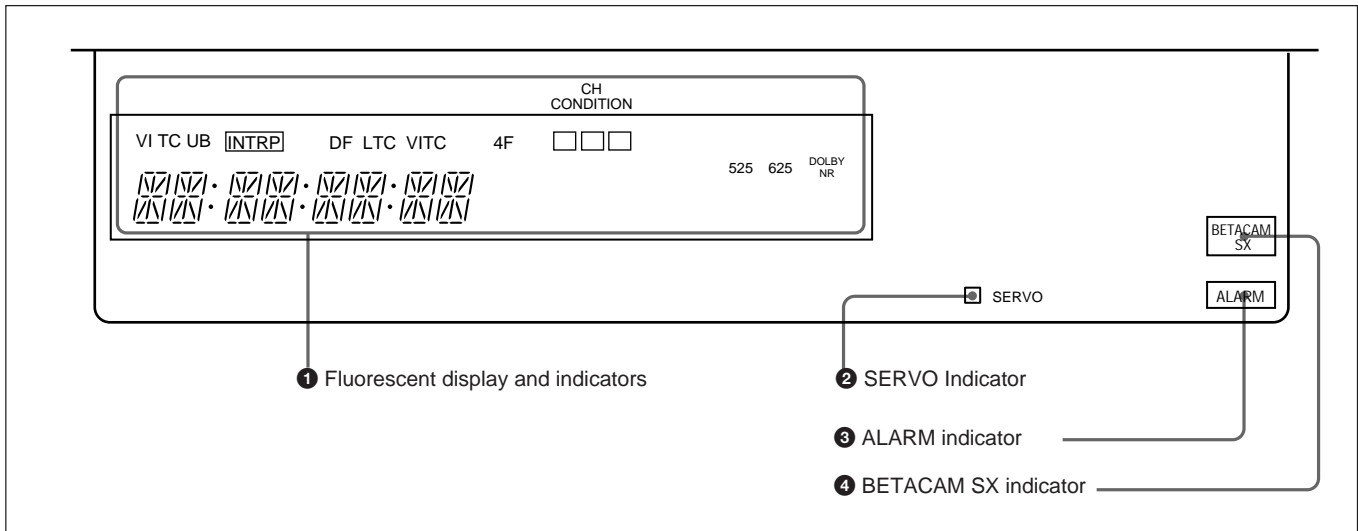
Display selection	Value displayed	Indicator status
CTL	Tape running time (hours, minutes, seconds, frames) computed from the CTL (control) signal recorded on the tape during playback.	TC and UB indicators are both off.
TC	Playback time code read by the internal time code reader. <sup>a)</sup>	The TC indicator lights and the UB indicator goes off.
UB	User bit value inserted in the playback time code. <sup>a)</sup>	The UB indicator lights and the TC indicator goes off.

a) The selection of LTC or VITC is made by the TC switch. When VITC is selected, the VITC indicator over the TC switch lights.

##### 4 RESET button

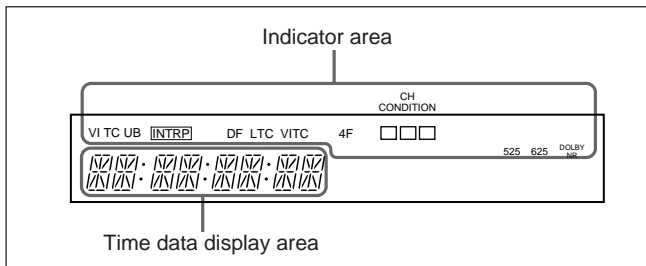
To reset a CTL, time code (TC) or user bit (UB) value displayed in the fluorescent display, hold this button down. Resetting the CTL value erases all edit points.

## 2 Display section



### 1 Fluorescent display and indicators

This comprises a time data display area and a number of indicators.



### Time data display area

Normally this displays a CTL count, time code value, or user bit value according to the setting of the CTL/TC/UB button in the menu/display setting section **1** and the setting of the TC switch in the upper control panel.

It is also used to display error messages and setup menus.

*For details of the selection of CTL count, time code value, or user bit value, see the description of the CTL/TC/UB button (previous page).*

### Indicator area

This includes the following indicators.

- **TC (time code) indicator:** This lights when a time code is displayed in the time data display area.
- **UB (user bits) indicator:** This lights when a user bit value is displayed in the time data display area.
- **VI (VITC) indicator:** When a VITC time code value or VITC user bit value is displayed in the time data display area, this indicator lights together with the TC or UB indicator.
- **INTRP (interpolation) indicator:** This lights when a playback time code reading error is interpolated using the CTL signal.
- **DF (drop-frame) indicator:** This lights when a displayed time code value is in drop-frame mode.
- **LTC, VITC indicators:** Regardless of the display in the time data display area, these indicators light when the corresponding time code values are being read.
- **CH (channel) CONDITION indicator:** A three-color indicator shows the state of the playback signal.
  - Green:** The state of the playback signal is good.
  - Yellow:** The playback signal is somewhat deteriorated, but playback is possible.
  - Red:** The playback signal is deteriorated. When this indicator remains on, head cleaning or an internal inspection is necessary.

## 2-1 Control Panels

- **525, 625 indicators:** The indicator showing the number of scan lines for the television standard selected using basic menu item 013 lights (NTSC: 525 scan lines, field frequency 60 Hz; PAL: 625 scan lines, field frequency 50 Hz).
- **DOLBY NR indicator:** This lights when the Dolby noise-reduction<sup>1)</sup> circuit is functioning.

### ② SERVO indicator

This indicator lights when the drum servo and capstan servo are locked<sup>2)</sup> and the tape is being played back normally.

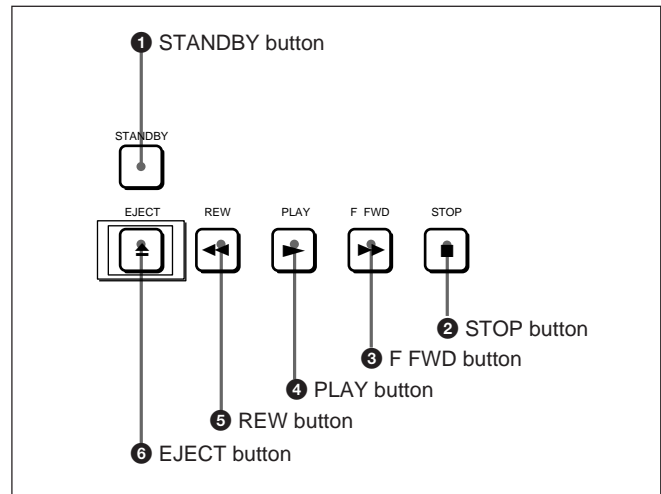
### ③ ALARM indicator

This lights when a hardware error is detected on the unit, and goes off when the error is resolved. When this indicator is lit, an error message appears in the fluorescent display. If you are using the COMPOSITE VIDEO OUTPUT 2 (SUPER) connector, then when the CHARACTER switch in the subsidiary control panel is set to ON, the error message also appears on the monitor screen.

### ④ BETACAM SX indicator

When playing back a tape recorded in Betacam SX format, this indicator lights.

## ③ Tape transport control section



### ① STANDBY button

When a cassette is inserted and this button is off, to put the VTR in standby mode, press the button, turning it on.

In standby mode, the drum is rotating and the tape is in contact with the drum. As a result, playback can start immediately.

To end standby mode, press the STANDBY button, turning it off.


If 8 minutes (value can be varied using extended menu item 501) elapse in standby mode, the unit automatically switches out of standby mode to protect the tape.

### ② STOP button

To stop playback, press this button, turning it on.

### ③ F FWD (fast forward) button

To fast forward the tape, press this button, turning it on.

1) Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

2) Servo lock: This refers to the synchronization of the phase of the drum rotation and the reference signal for the tape transport position, so that the video heads can trace the same pattern on the tape for playback or recording.

**④ PLAY button**

To start playback, press this button, turning it on.

**To operate in capstan override mode**

Hold down this button, and turn the search dial.

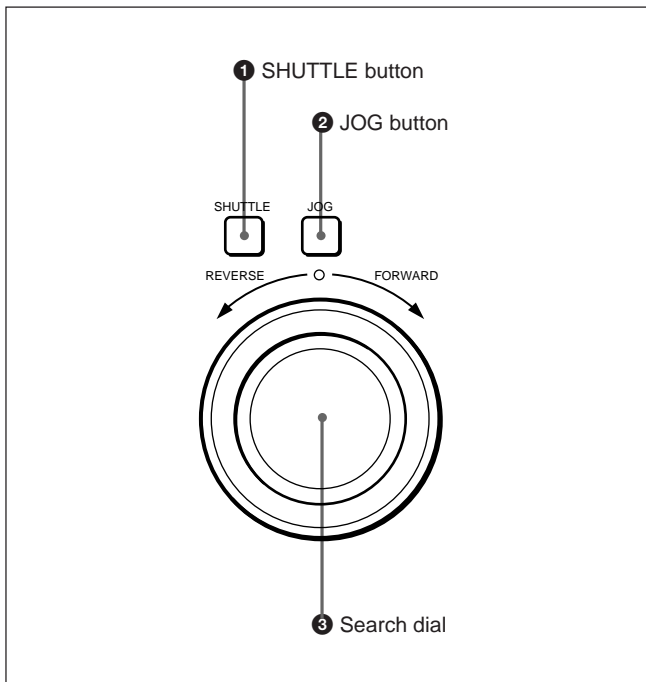
*For details of capstan override mode, see the item relating to the search dial (this page).*

**⑤ REW (rewind) button**

To rewind the tape, press this button, turning it on.

**⑥ EJECT button**

Press this button to eject the cassette. While the cassette is being ejected, this button lights.

**④ Search control section****① SHUTTLE button**

To use the search dial for playback in shuttle mode, press this button, turning it on.

*For details of playback in shuttle mode, see the item for the search dial ③.*

**② JOG button**

To use the search dial for playback in jog mode, press this button, turning it on.

*For details of playback in jog mode, see the item for the search dial ③.*

**③ Search dial**

Turn this to carry out playback in the modes shown in the following table. Turn the dial clockwise for forward playback and counterclockwise for reverse playback.

You can carry out noiseless playback in the range of  $\pm 1$  times normal speed from a Betacam SX format tape.

Playback modes using the search dial

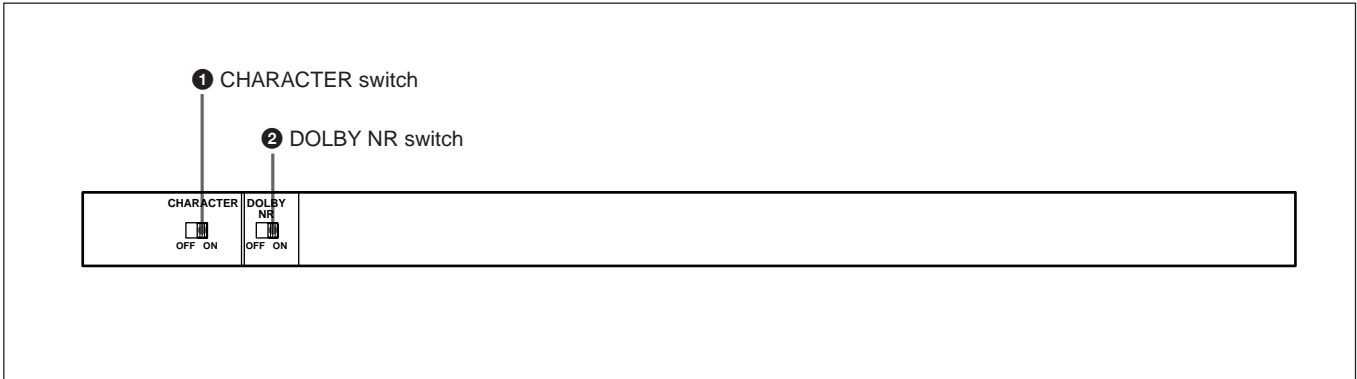
Playback mode	Operations and functions
Shuttle	<p>Press the SHUTTLE button or the search dial so that the SHUTTLE button lights, then turn the search dial. Playback is carried out at a speed determined by the position of the search dial. The playback speed range is as follows:</p> <ul style="list-style-type: none"> <li>• Using a Betacam SX tape: <math>-50</math> to <math>+50</math> times normal speed</li> <li>• Using an analog Betacam tape: <math>-35</math> to <math>+35</math> times normal speed for DNW-A22 or <math>-42</math> to <math>+42</math> times normal speed for DNW-A22P</li> </ul> <p>The search dial has detents at the still position and at <math>\pm 10</math> times normal speed.</p>
Jog	<p>Press the JOG button or the search dial so that the JOG button lights, then turn the search dial. Playback is carried out at a speed determined by the speed of rotation of the search dial. The playback speed range is <math>-1</math> to <math>+1</math> time normal speed:</p> <p>The search dial has no detents.</p>
Capstan override	<p>Hold down the PLAY button and turn the search dial to adjust the playback speed in the range of <math>\pm 15\%</math>. Use this for phase adjustment between this unit and an external connected device.</p>

Changing the setting of extended menu item 101 enables you to use the search dial alone to select shuttle/jog modes, without using the SHUTTLE, and JOG buttons.

## 2-1 Control Panels

### 2-1-3 Subsidiary Control Panel

Pull out the lower control panel to reveal the subsidiary control panel.



#### ① CHARACTER switch

Select whether or not to superimpose text information such as time code, menu settings, and alarm messages on the video signal output from the COMPOSITE VIDEO OUTPUT 2 (SUPER) connector.

**ON:** Superimposed text.

**OFF:** No superimposed text.

The factory default setting is ON.

#### ② DOLBY NR (noise reduction) switch

When using an oxide tape, switch the Dolby noise-reduction system for analog audio on or off.

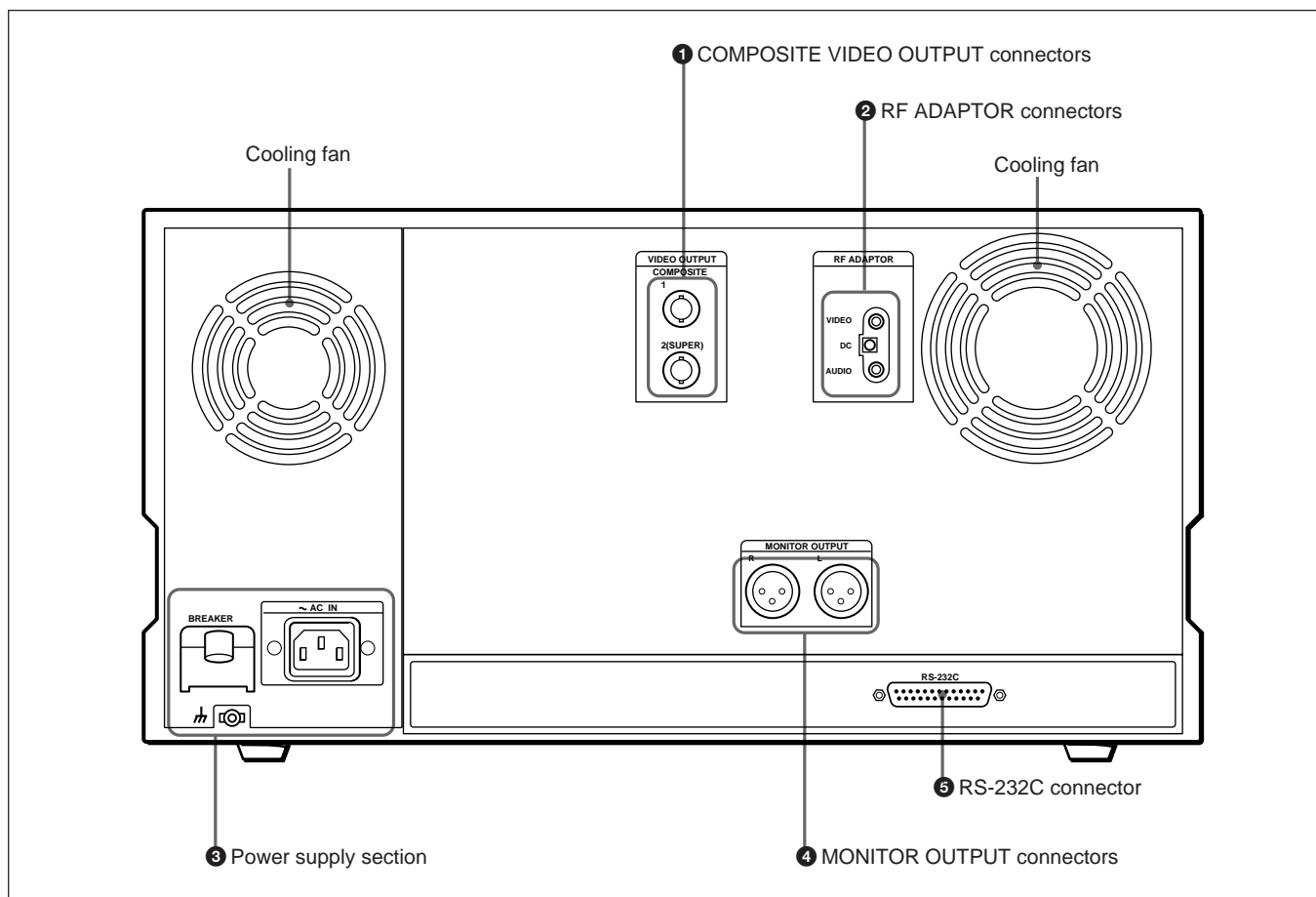
When using metal tape, the Dolby noise-reduction system is automatically switched on, regardless of the setting of this switch.

**ON:** Enable the Dolby noise-reduction system for playback of an analog Betacam oxide tape.

**OFF:** Disable the Dolby noise-reduction system for playback of an analog Betacam oxide tape.  
The factory default setting is OFF.



## 2-2 Connector Panel



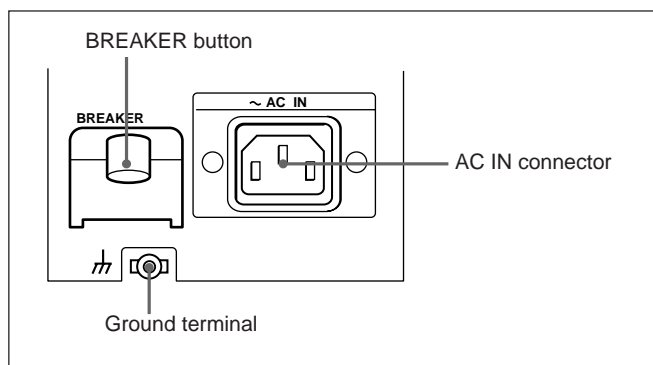
### 1 COMPOSITE VIDEO OUTPUT connectors (BNC type)

These output analog composite video signals. When the CHARACTER switch on the subsidiary control panel is set to ON, the output from connector 2 (SUPER) has superimposed text information such as time code, menu settings, and alarm messages.

### 2 RF ADAPTOR connectors

Connect the optional RFU-89KB RFU Adaptor Kit when using an ordinary TV set for monitoring video and audio playback.

### 3 Power supply section



### AC IN connector

Use the supplied power cord to connect this to an AC outlet.

### BREAKER button

This jumps out if an excess current flows on the primary side of the AC power circuit.

### Ground terminal

Connect this to ground.

### 4 MONITOR OUTPUT connectors (XLR 3-pin, male)

According to the setting of the AUDIO MONITOR SELECT buttons on the upper control panel, two (L and R) audio monitor signals are output.

### 5 RS-232C connector (D-subminiature 25-pin)

Use this for monitoring and diagnosis of the state of this unit from an external computer, using ISR (Interactive Status Reporting).



## 3-1 Setup

The principal setup operations before operating this unit can be carried out using setup menus.

The setup menus of this unit comprise a basic menu and an extended menu. The contents of these menus are as follows.

### Basic menu:

- Items relating to the hours meter
- Items relating to the superimposed character information
- Items relating to 525 (NTSC)/625 (PAL) system switching
- Items relating to menu banks

### Extended menu:

- Items relating to the control panels
- Items relating to editing operations
- Items relating to tape protection
- Items relating to video control
- Items relating to audio control

*For detailed information about the items, except for the basic menu items relating to the hours meter, of these menus and how to use them, see Chapter 5, “Menu System”.*

*For details of the basic menu items relating to the hours meter, see Section 6-4, “Digital Hours Meter” (page 6-3).*

This unit allows four different sets of menu settings to be saved in what are termed “menu banks” numbered 1 to 4. Saved sets of menu settings can be recalled for use as required.

*For more information about the menu banks, see the section “Menu bank operations (menu items B01 to B14)” (page 5-7).*

## 3-2 Superimposed Character Information

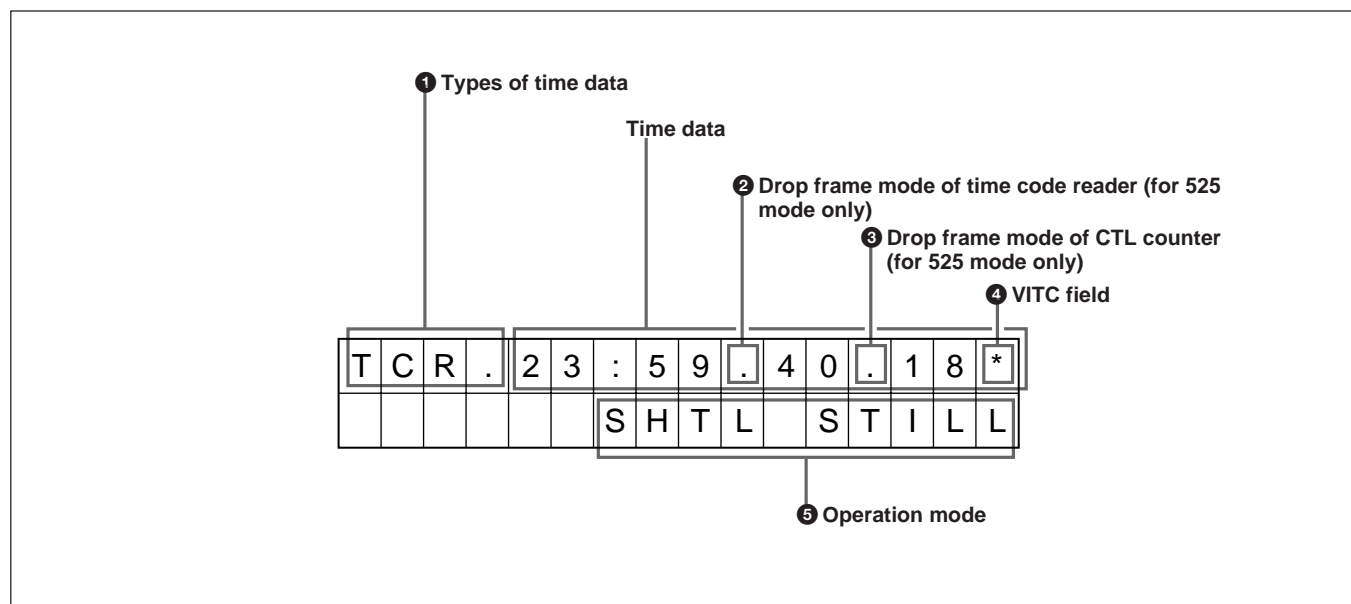
When the CHARACTER switch on the subsidiary control panel is set to ON, the video signal output from the COMPOSITE VIDEO OUTPUT 2 (SUPER) connector contains superimposed character information, including time code, menu settings, and alarm messages.

### Adjusting the character display

You can adjust the position, size and type of the superimposed characters using the basic menu.

*For details of the basic menu, see Section 5-2, “Basic Menu” (page 5-1).*

### Information displayed



#### Note

The display shown above corresponds to the factory default settings of the unit. Changing the setting of basic menu item 005 allows different time data to be displayed in the bottom line of the display.

*For details of basic menu item 005, see Section 5-2-1, “Items in the Basic Menu” (page 5-1).*

#### 1 Types of time data

Display	Meaning
CTL	CTL counter data
TCR	LTC reader time code
UBR	LTC reader user's bits
TCR.	VITC reader time code
UBR.	VITC reader user's bits

#### Note

If the time data or user's bits cannot be read correctly, they will be displayed with an asterisk. For example, “T\*R”, “U\*R”, “T\*R.” or “U\*R.”.

#### 2 Drop frame mode of time code reader (for 525 mode only)

“.”: Drop frame mode

“:”: Non-drop-frame mode

### ③ Drop frame mode of CTL counter (for 525 mode only)

“.”: Drop frame mode (factory preset)

“:”: Non-drop-frame mode

### ④ VITC field

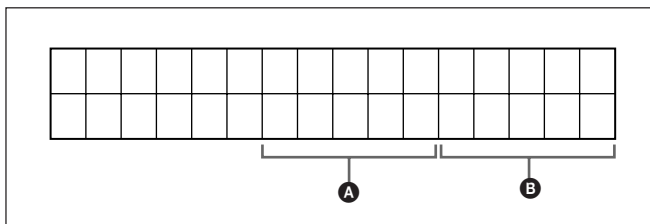
“ ” (blank): Fields 1 and 3

“\*”: Fields 2 and 4

### ⑤ Operation mode

The field is divided into two blocks, A and B.

- Block A displays the operation mode.
- Block B displays the servo lock status or tape speed.



Display		Operation mode
Block A	Block B	
TAPE UNTHD		Cassette is not loaded.
STDBY OFF		Standby off mode
T.RELEASE		Tape tension released
STOP		Stop mode
F.FWD		Fast forward mode
REW		Rewind mode
PLAY		Playback mode (servo unlocked)
PLAY	LOCK	Playback mode (servo locked)
PLAY	Deviation from normal speed (%)	Capstan override mode or program play mode
JOG	STILL	A still picture in jog mode
JOG	FWD	Jog mode in forward direction
JOG	REV	Jog mode in reverse direction
SHTL	(Speed)	Shuttle mode

## 3-3 Cassettes

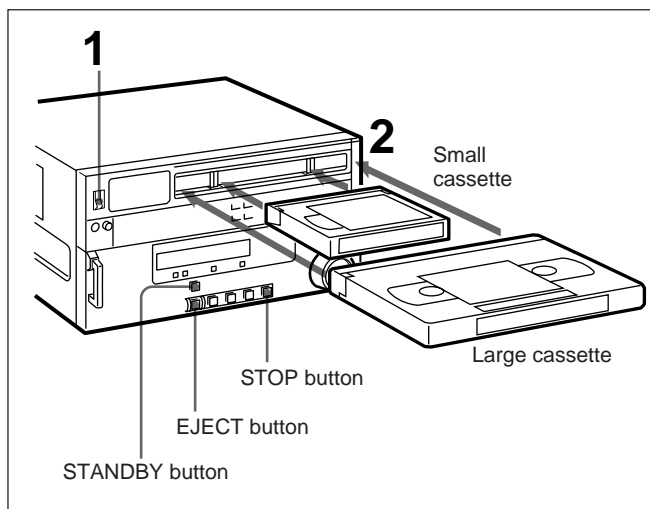
### 3-3-1 Cassette Types

This unit uses a 1/2-inch tape width. It can play Betacam SX cassettes, Betacam SP cassettes, or UVW cassettes.

### 3-3-2 Inserting and Ejecting Cassettes

It is not possible to insert or eject a cassette unless the unit is powered on.

#### Inserting a cassette



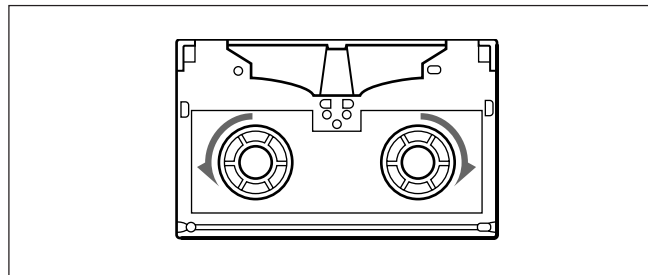
- 1 Turn the POWER switch on.
- 2 Check the following points, before inserting the cassette in the orientation shown in the figure.
  - Check that message “ERROR-10” is not shown in the time data display area.
  - Check that there is no slack in the tape.

The cassette is drawn into the unit, and the STANDBY and STOP buttons light.

*If message “ERROR-10” appears in the time data display area, there is moisture condensation in the unit. For steps to take when “ERROR-10” is displayed, see Section 6-3, “Moisture Condensation” (page 6-2).*

#### Removing slack from the tape

Press in one of the reels with a finger, and turn gently in the direction shown by the arrows until there is no slack in the tape.



#### Ejecting a cassette

Press the EJECT button.

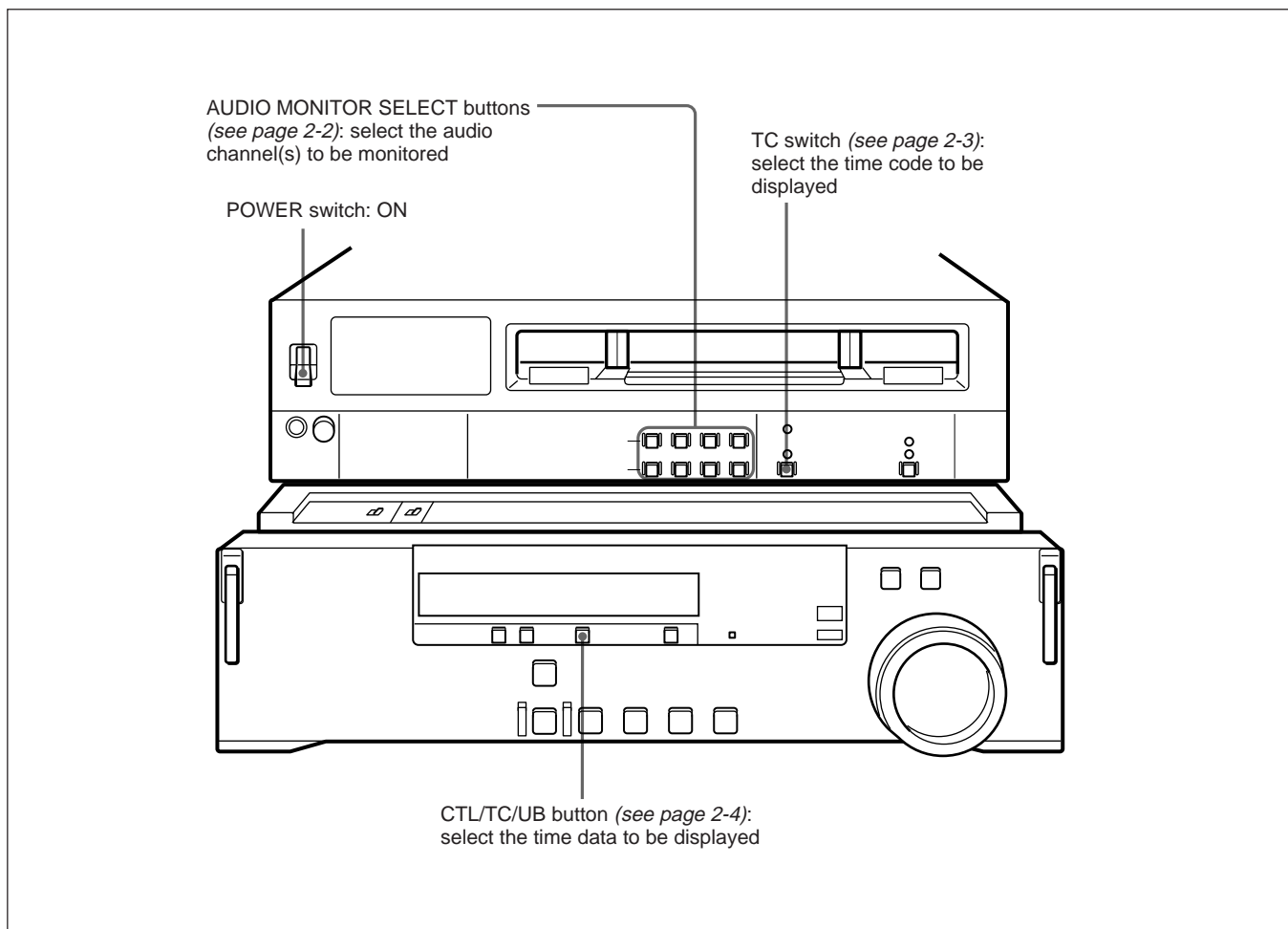
*If the tape slacks inside the unit, pressing the EJECT button may not eject the cassette. For information about how to remove the cassette in such a case, refer to the Maintenance Manual.*

## 4-1 Preparations for Playback

### Switch settings

Before beginning playback, make any necessary switch settings.

*For details of the settings of each of the switches, refer to the pages indicated in parenthesis.*



### Time data selection

#### Displayed time data

Use the CTL/TC/UB button to select one of CTL (control), time code, and user bit values. When you select time code, the data displayed is determined by the setting (LTC/VITC) of the TC switch as follows.

TC switch setting	Displayed data
LTC	LTC recorded on tape
VITC	VITC recorded on tape

## 4-2 Playback Procedures

This section describes the following types of playback which the unit can carry out:

- Normal playback  
Playback at normal ( $\times 1$ ) speed
- Playback in jog mode  
Variable speed playback, with the speed determined by the speed of turning the search dial
- Playback in shuttle mode  
Variable speed playback, with the speed determined by the angular position of the search dial
- Playback using the capstan override function  
The playback speed is adjusted temporarily according to the angular position of the search dial, to align the playback phase with that of another VTR.

### 4-2-1 Normal Playback

Insert a required cassette beforehand.

For details of how to insert a cassette, see Section 3-3-2, "Inserting and Ejecting Cassettes" (page 3-4).

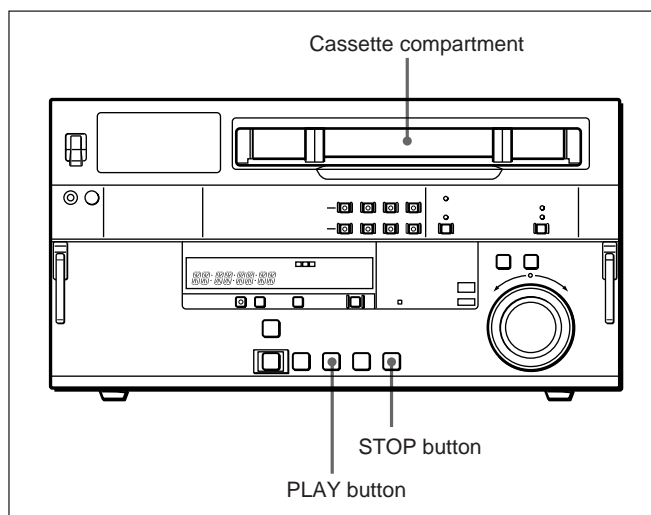
#### To start playback

Press the PLAY button.

Playback starts, the servo locks, and the SERVO indicator lights.

#### To stop playback

Press the STOP button.



#### If you play back to the end of the tape

The tape is automatically rewound, and stops.

#### When using the Dolby noise reduction system

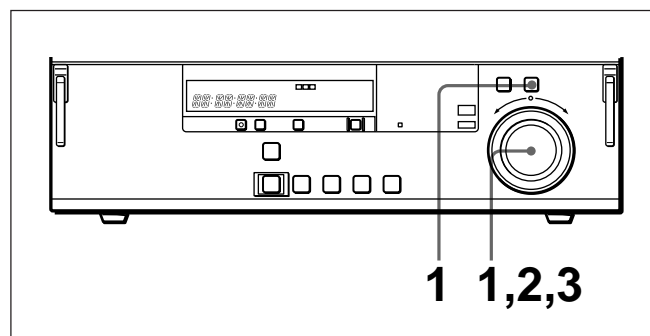
When using an analog Betacam cassette, you can use Dolby C noise reduction for audio playback.

To activate the Dolby noise reduction system, set the DOLBY NR switch on the subsidiary control panel to ON.

### 4-2-2 Playback in Jog Mode

In jog mode, you can control the speed of playback by the speed of turning the search dial. The playback speed range is  $\pm 1$  times normal speed.

To carry out playback in jog mode, use the following procedure.



- 1 Press the JOG button or search dial so that the JOG button is lit.

Pressing the search dial toggles between jog mode and shuttle mode.

- 2 Turn the search dial in the desired direction, at the speed corresponding to the desired playback speed.

Playback in jog mode starts.

- 3 To stop playback in jog mode, stop turning the search dial.

The search dial function to toggle between jog mode and shuttle mode every time being pressed can be prohibited by changing the setting of extended menu item 101.



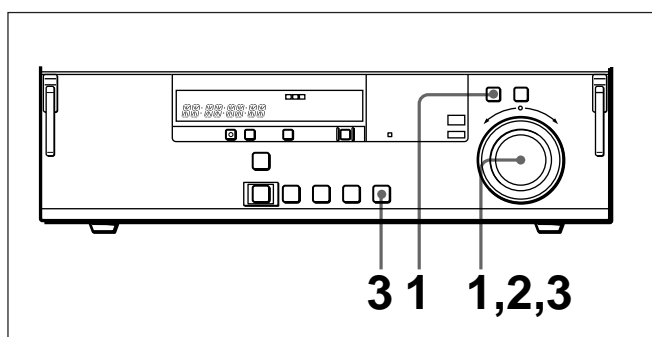
### 4-2-3 Playback in Shuttle Mode

In shuttle mode, you can control the speed of playback by the angular position of the search dial. The range of playback speed is as follows:

- Using a Betacam SX tape:  $\pm 50$  times
- Using an analog Betacam tape:  $\pm 35$  times (DNW-A22)/ $\pm 42$  times (DNW-A22P)

There are detents on the search dial at the still position and at  $\pm 10$  times normal speed.

To carry out playback in shuttle mode, use the following procedure.



- 1 Press the SHUTTLE button or search dial so that the SHUTTLE button is lit.

Pressing the search dial toggles between jog mode and shuttle mode.

- 2 Turn the search dial to the desired angle corresponding to the desired playback speed.

Playback in shuttle mode starts.

- 3 To stop playback in shuttle mode, return the search dial to the center position, or press the STOP button.

The search dial function to toggle between jog mode and shuttle mode every time being pressed can be prohibited by changing the setting of extended menu item 101.

#### To return to normal-speed playback

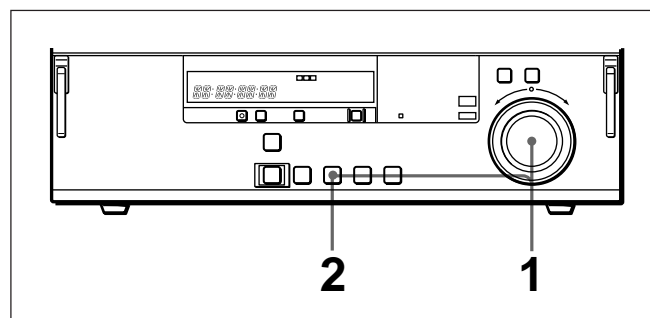
Press the PLAY button.

#### To alternate between normal-speed playback and shuttle mode playback

Set the search dial to the position corresponding to the desired shuttle playback speed, then switch between normal-speed playback and shuttle playback by pressing the PLAY and SHUTTLE buttons alternately. For intermittent shuttle mode playback, press the STOP and SHUTTLE buttons alternately.

### 4-2-4 Playback Using the Capstan Override Function

You can use the capstan override function to adjust the playback speed temporarily. The range of speed adjustment is  $\pm 15\%$  in steps of 1%. This function is convenient for playback phase synchronization with another VTR playing back the same program.



- 1 Hold down the PLAY button, and turn the search dial in the desired direction to adjust the playback speed.

The SERVO indicator goes off.

- 2 When the adjustment is completed, release the PLAY button.

The tape transport returns to normal speed, and the SERVO indicator comes on again.



## 5-1 Menu System Configuration

The menu system of this unit comprises the basic menu and extended menu.

- Basic menu

This menu is used to make settings relating, for example, to the following.

- the hours meter
- the character information superimposed on the output to the monitor
- switching between the 525/60 (NTSC) system and 625/50 (PAL) system
- the menu banks for retaining menu settings

*For detailed information about menu operation relating to the hours meter, see Section 6-4 “Digital Hours Meter” (page 6-3).*

- Extended menu

This menu is used to make a wide range of settings relating to the functions of this unit, for example, the control panel functions, video and audio control, and digital data processing.

## 5-2 Basic Menu

### 5-2-1 Items in the Basic Menu

The basic menu contains the following items.

default settings are indicated by an enclosing box.

In the “Settings” column of the table, the factory

Item number	Item name	Settings
002 <sup>a)</sup>	CHARACTER H-POSITION	Adjust the horizontal screen position of the character information output from the COMPOSITE VIDEO OUTPUT 2 (SUPER) connector for superimposed display on the monitor. <b>00 ... <span style="border: 1px solid black;">14</span> ... 22 (525 mode)/00 ... <span style="border: 1px solid black;">12</span> ... 22 (625 mode):</b> The hexadecimal value 00 is for the far left of the screen and 24 (decimal 36) for the far right. Increasing the value moves the position of the characters to the right.
003 <sup>a), b)</sup>	CHARACTER V-POSITION	Adjust the vertical screen position of the first line of the characters information output from the COMPOSITE VIDEO OUTPUT 2 (SUPER) connector for superimposed display on the monitor. <b>00 ... <span style="border: 1px solid black;">56</span> ... 6A (525 mode)/00 ... <span style="border: 1px solid black;">6A</span> ... 81 (625 mode):</b> The hexadecimal value 00 is for the top of the screen and increasing the value lowers the position of the characters.

a) When setting items 002, 003, 009, and 011, watch the monitor screen, and adjust to the required state.

b) When displaying time code values, there is a slight time delay. Therefore, when creating a tape for off-line editing, the information inserted in the upper half of the screen may be delayed by one frame.

(Continued)

## 5-2 Basic Menu

Item number	Item name	Settings
005	DISPLAY INFORMATION SELECT	<p>Determines the kind of character information to be output from the COMPOSITE VIDEO OUTPUT 2 (SUPER) connector when the CHARACTER switch on the subsidiary control panel is set to ON.</p> <p><b>T&amp;STA</b>: Time data display information and the unit's status.  <b>T&amp;UB</b>: Time data display information and the user's bits.  <b>T&amp;CTL</b>: Time data display information and CTL.  <b>T&amp;T</b>: Time data display information and time code (LTC or VITC).  <b>TIME</b>: Time code (LTC or VITC) only.</p> <p>If there is a overlap between the setting of this item and the setting of the control panel, it is automatically avoided. For example, if CTL is selected on the control panel and this menu item setting is T&amp;CTL, then CTL and LTC are output.</p>
007	TAPE TIMER DISPLAY	<p>Determines whether to display the CTL count in 12-hour mode or 24-hour mode.</p> <p><b>+ -12H</b>: 12-hour mode  <b>24H</b>: 24-hour mode</p>
009 <sup>a)</sup>	CHARACTER TYPE	<p>Determines the type of characters such as time code output from the COMPOSITE VIDEO OUTPUT 2 (SUPER) connector for superimposed display on the monitor.</p> <p><b>WHITE</b>: White letters on a black background.  <b>BLACK</b>: Black letters on a white background.  <b>W/OUT</b>: White outline letters.  <b>B/OUT</b>: Black outline letters.</p>
011 <sup>a)</sup>	CHARACTER V-SIZE	<p>Determines the vertical size of characters such as time code output from the COMPOSITE VIDEO OUTPUT 2 (SUPER) connector for superimposed display on the monitor.</p> <p><b>×1</b>: Standard size  <b>×2</b>: 2 times standard size  <b>×3</b>: 3 times standard size  <b>×4</b>: 4 times standard size</p>
013	525/625 SYSTEM SELECT	<p>Specify whether to enable switching between the 525 (NTSC) and 625 (PAL) systems.</p> <p><b>OFF</b>: Do not enable system switching.  <b>ON</b>: Enable system switching.</p> <p>Setting this item to ON and switching the system enables the unit to operate in the system switched to.</p> <p><b>Note</b></p> <p>When using the DNW-A22 in 625 mode or when using the DNW-A22P in 525 mode, you cannot play back the Betacam/Betacam SP tapes.</p> <p><i>For information on how to switch the system, see the section "Switching between 525/625 line systems (menu item 013)" (page 5-5).</i></p>
B01	RECALL BANK 1	Set to ON to recall menu settings from menu bank 1.
B02	RECALL BANK 2	Set to ON to recall menu settings from menu bank 2.
B03	RECALL BANK 3	Set to ON to recall menu settings from menu bank 3.
B04	RECALL BANK 4	Set to ON to recall menu settings from menu bank 4.
B11	SAVE BANK 1	Set to ON to save current menu settings to menu bank 1.
B12	SAVE BANK 2	Set to ON to save current menu settings to menu bank 2.
B13	SAVE BANK 3	Set to ON to save current menu settings to menu bank 3.
B14	SAVE BANK 4	Set to ON to save current menu settings to menu bank 4.
B20	RESET SETUP	Set to ON to reset current active settings to factory default values.

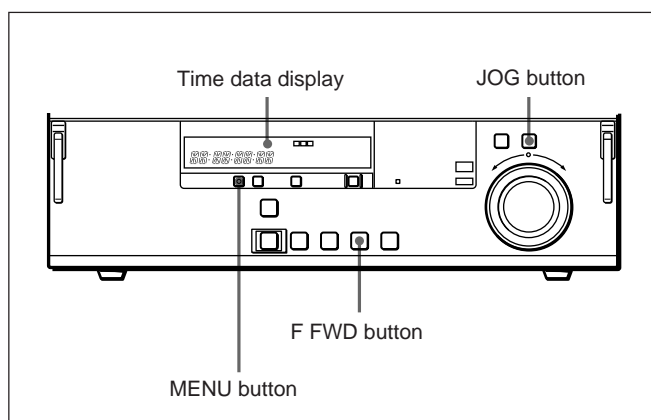
a) When setting items 002, 003, 009, and 011, watch the monitor screen, and adjust to the required state.

## 5-2-2 Basic Menu Operations

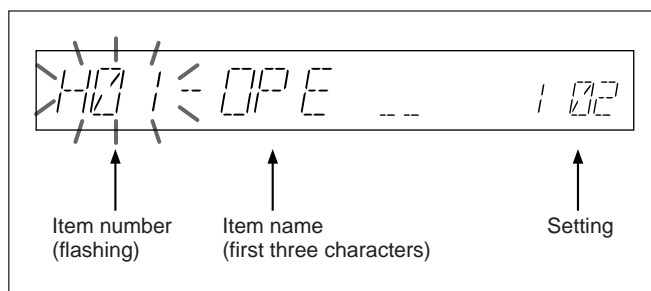
This section describes the basic menu displays and how to change the settings.

For information about how to use item 013, see the section “Switching between 525/625 line systems (menu item 013)” (page 5-5), and for information about how to use items B01 to B14, see the section “Menu bank operations (menu items B01 to B14)” (page 5-7).

### Displaying the menus

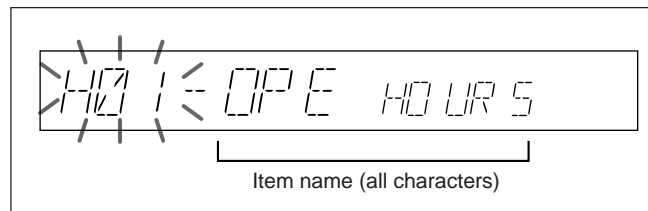


Press the MENU button, turning it on.  
The F FWD button and JOG button light, and the setting of the currently selected menu item appears in the time data display.



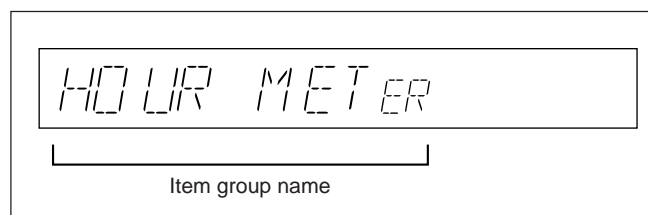
### To display the full item name

Hold down the F FWD button.



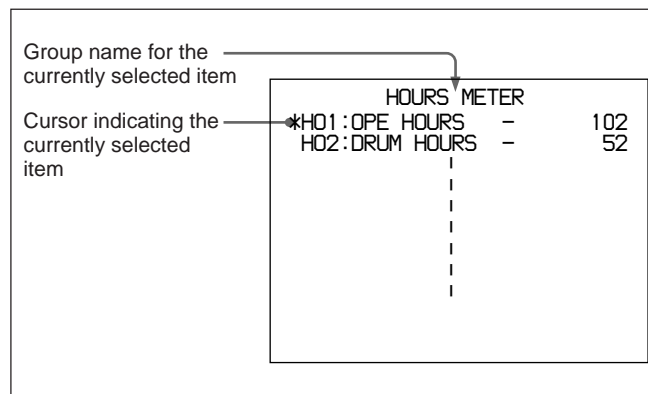
### To display the item group name

Items in the menu are arranged in groups, by the 100's digit of the item number. To display the name of the group to which the currently selected item belongs, hold down the JOG button.



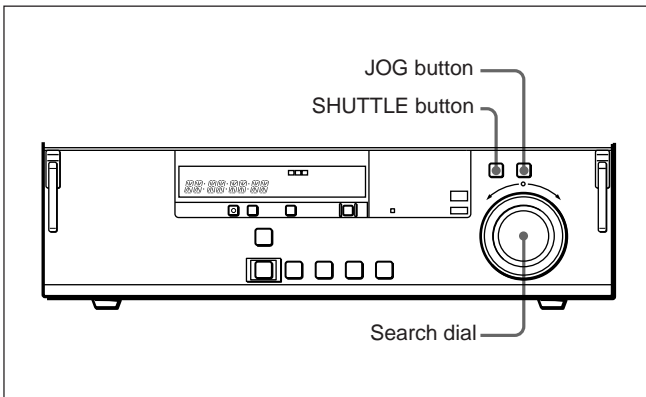
### Output from COMPOSITE VIDEO OUTPUT 2 (SUPER) connector

If the CHARACTER switch on the subsidiary control panel is set to ON, then when you display a menu item on the time data display, a full-screen version also appears on a monitor connected to the COMPOSITE VIDEO OUTPUT 2 (SUPER) connector as shown in the following figure.



## 5-2 Basic Menu

### Changing the currently displayed menu item



Turn the search dial.

Turning the search dial in the forward direction increments the item number, and turning it in the reverse direction decrements the item number.

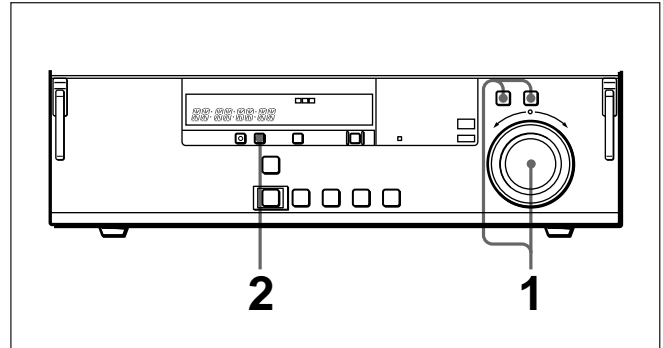
If you press the SHUTTLE button or JOG button, turning it on, then turn the search dial, the item number changes at a rate depending on the search dial position (when the SHUTTLE button is lit) or on the search dial rotation rate (when the JOG button is lit).

#### To skip from one item group to the next

Hold down the JOG button, and turn the search dial.

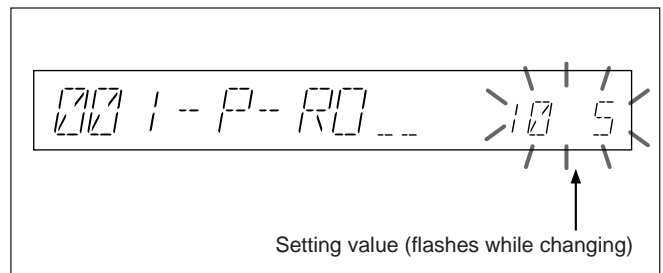
### Changing a menu item setting value

To change the setting value of the currently displayed menu item, use the following procedure.



- 1 Holding down the SHUTTLE button or JOG button, turn the search dial.

The setting value changes at a rate depending on the search dial position (when the SHUTTLE button is lit) or on the search dial rotation rate (when the JOG button is lit).



- 2 When the desired setting value is displayed, press the SET button.

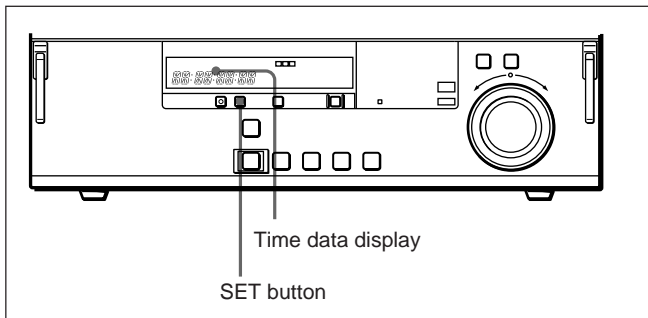
This saves the new setting value, and the menu display disappears from the time data display.

#### To abandon making a change

Press the MENU button before pressing the SET button.

The menu display disappears from the time data display, without the new setting value being saved.

## Resetting the menu settings to their factory default values (menu item B20)



- 1 Set menu item B20 RESET SETUP to ON.

“PUSH SET BTN” appears in the time data display, and “Push SET button” appears on the monitor screen.

- 2 Press the SET button.

The current active menu settings (*see page 5-7*) are reset to their factory default settings.

- 3 Press the SET button again.

The settings are saved and the menu display disappears from the time data display.

## Switching between 525/625 line systems (menu item 013)

Using the following procedure, you can set basic menu item 013, 525/625 SYSTEM SELECT, to “ON”, and then switch between 525 (NTSC) and 625 (PAL).

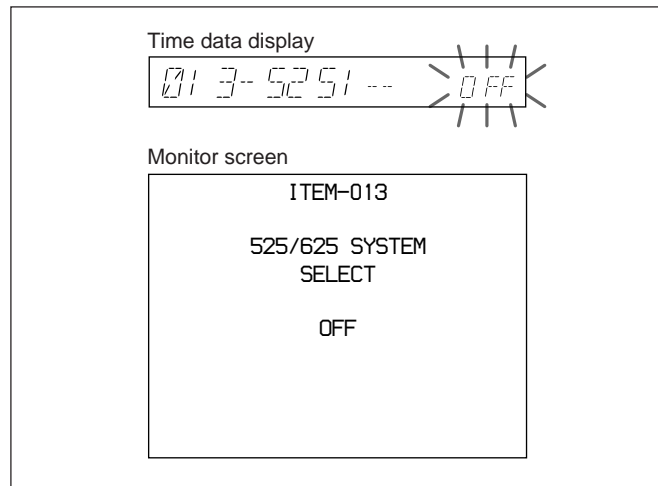
### Notes

- Before carrying out this operation, consult the person responsible for the installation.
- When using the DNW-A22 in 625 mode or when using the DNW-A22P in 525 mode, you cannot play back the Betacam/Betacam SP tapes.

(The following procedure shows by way of example how to switch from a 525 (NTSC) system to a 625 (PAL) system.)

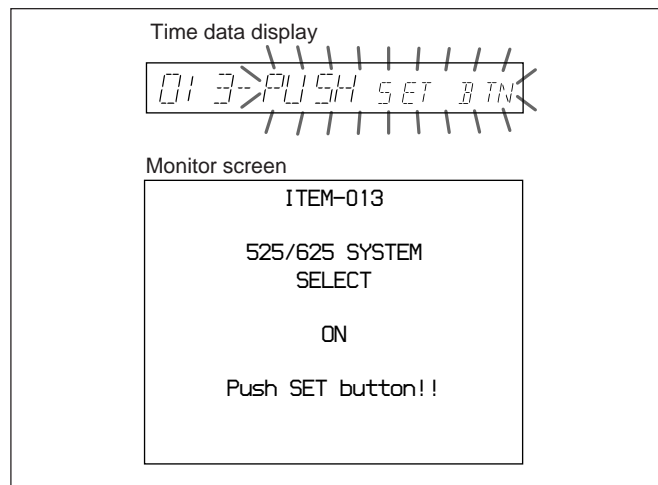
- 1 Select menu item 013.

The time data display and the monitor screen connected to the COMPOSITE VIDEO OUTPUT 2 (SUPER) connector show the following displays.



- 2 Holding down the JOG button, turn the search dial to change the setting from “OFF” to “ON”.

The displays change as follows.

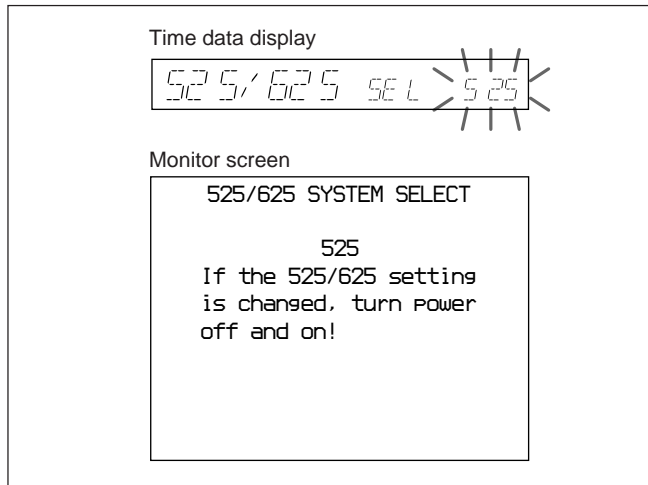


(Continued)

## 5-2 Basic Menu

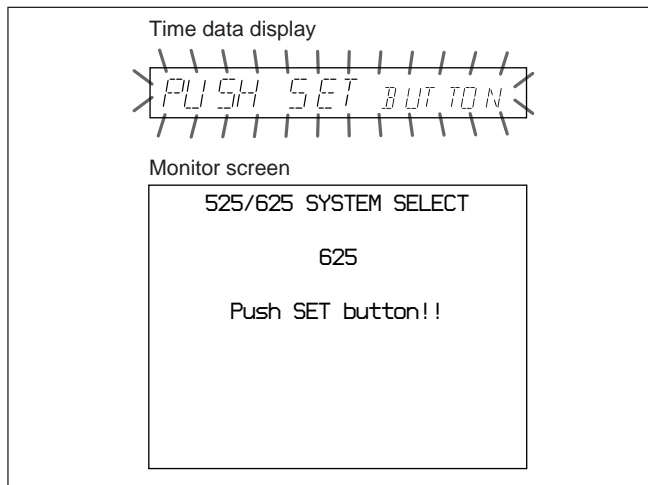
### 3 Press the SET button.

The displays change as follows.



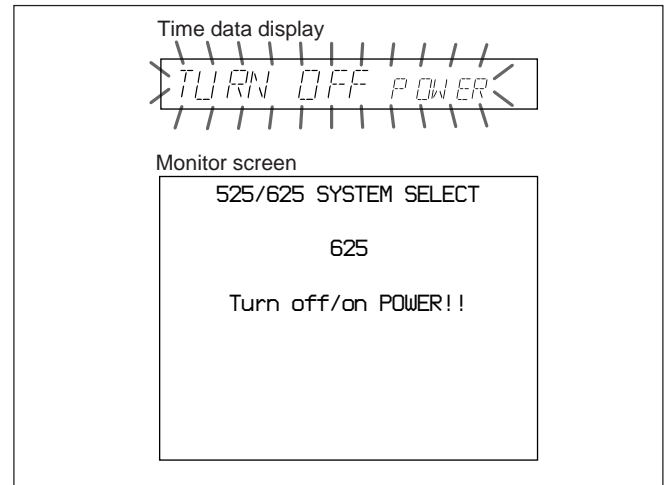
### 4 Holding down the JOG button, turn the search dial to change the setting from “525” to “625”.

The displays change as follows.



### 5 Press the SET button.

The displays change as follows.



#### To abandon the 525/625 setting operation

Press the MENU button a required number of times to exit from the menu.

### 6 Turn the POWER switch off momentarily, then on again.

This switches from a 525 (NTSC) to 625 (PAL) system; the 525 indicator goes off, and the 625 indicator lights.

The menu settings disappear from the time data display, which returns to the normal indications.



## Menu bank operations (menu items B01 to B14)

This unit allows four different complete sets of menu settings to be saved in what are termed “menu banks” numbered 1 to 4. Saved sets of menu settings can be recalled for use as required.

### To jump to menu item B01

You can recall any required menu item by turning the search dial after pressing the MENU button.

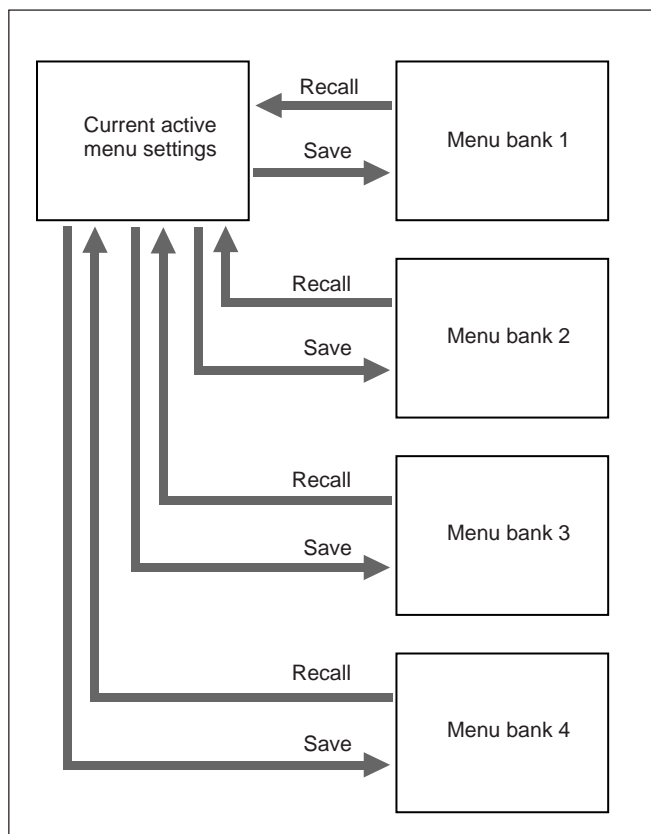
If you press the MENU button first, then the CTL/TC/UB button, you can jump directly to menu item B01 or H01. The recalled menu item toggles between B01 and H01 every time you press the CTL/TC/UB button.

### Saving the current active menu settings

Set one of menu items B11 SAVE BANK 1 to B14 SAVE BANK 4 to ON, depending on which of the menu banks you wish to save in, then press the SET button.

### Recalling settings from a menu bank

Set one of menu items B01 RECALL BANK 1 to B04 RECALL BANK 4 to ON, depending on which of the menu banks you wish to recall from, then press the SET button.



## 5-3 Extended Menu

### 5-3-1 Items in the Extended Menu

The extended menu contains the following items.  
In the “Settings” column of the table, the factory default settings are indicated by an enclosing box.

Item number	Item name		Settings
101	SELECTION FOR SEARCH DIAL ENABLE		Select how the unit enters the search mode. <b>DIAL</b> : Turning the search dial switches to search mode. <b>KEY</b> : The JOG or SHUTTLE button must be pressed to switch to search mode.
102	MAXIMUM TAPE SPEED		Set the tape speed for fast-forward, rewind and search mode operations. <b>MAX</b> : Fast forward, rewind and search mode operations are carried out at maximum speed. <b>MX/24</b> : Fast forward and rewind operations are carried out at maximum speed, and search mode operations are carried out at up to 24 times normal speed. <b>×24</b> : Fast forward, rewind and search mode operations are carried out at up to 24 times normal speed.  <b>Maximum speed for fast forward and rewind</b> <ul style="list-style-type: none"><li>• Analog cassettes: 35 times normal (DNW-A22)/42 times normal (DNW-A22P)</li><li>• Digital cassettes: 80 times normal</li></ul> <b>Maximum speed for search mode</b> <ul style="list-style-type: none"><li>• Analog cassettes: 35 times normal (DNW-A22)/42 times normal (DNW-A22P)</li><li>• Digital cassettes: 50 times normal</li></ul>
104	AUDIO MUTING TIME		Select the length of time for which audio muting occurs when the unit switches to playback either from stopped or from still playback in the search mode (for Betacam compatible playback only). <b>OFF</b> : Set the audio muting time to zero (i.e. no muting). <b>0.1S ... 1.0S</b> : Set the audio muting time from 0.1 seconds to 1.0 second, in 0.1-second increments.
320	DIGITAL AUDIO PB PROCESS ON EDIT POINT		Select the method of digital audio playback at edit points. <b>CUT</b> : Play back in cut-in/cut-out mode. <b>FADE</b> : Play back in fade-in/fade-out mode.
501	STILL TIMER		Select the time delay from the tape transport stopping (either the “STOP mode” or the still playback mode in search mode) until the unit automatically switches to the tape protection mode, in order to protect the video heads and the tape. <b>0.5S ... 8M ... 30M</b> : Set the value in the range 0.5 seconds to 30 minutes.
703	BLANK LINE SELECT		Switch blanking on or off for individual lines in the vertical blanking interval. The Y/C signal and odd/even fields are blanked simultaneously.  <b>Note</b> For playback of an analog Betacam cassette (Betacam SP, etc.) regardless of the setting of this item, the chrominance signal is blanked up to line 15.
	Sub-Item		
	0	ALL LINE	<b>---</b> : Specify the blanking for each line separately. <b>BLANK</b> : Regardless of the setting of other sub-items, blank all lines which can be specified in this menu item. <b>THROU</b> : Regardless of the setting of other sub-items, switch off blanking for all lines which can be specified in this menu item.
	In 525 mode 12 ... 20	LINE 12 ... LINE 20	Specify blanking for lines 12 to 20. <b>BLANK</b> : Carry out blanking. <b>THROU</b> : Switch off blanking.
In 625 mode	9 ... 22	LINE 9 ... LINE 22	Specify blanking for lines 9 to 22. <b>BLANK</b> : Carry out blanking. <b>THROU</b> : Switch off blanking.
	23	LINE 23	Specify blanking for line 23. <b>HALF</b> : Carry out half-blanking. <b>THROU</b> : Switch off blanking.

(Continued)

Item number	Item name	Settings
802	DIGITAL AUDIO MUTE IN SHUTTLE MODE	Set the digital audio muting conditions during shuttle playback. However, the digital audio signal is muted irrespective of this setting when the tape speed exceeds 24 times the normal speed. <b>OFF</b> : Not muted. <b>CUEUP</b> : Muted during cue-up or preroll operations. <b>FULL</b> : Muted in shuttle mode.
805	AUDIO MONITOR OUTPUT MIXING	Select the audio mixing method used for digital audio signals and Betacam playback analog audio signals supplied to the MONITOR OUTPUT connector. <b>ADD</b> : Simple addition. <b>RMS</b> : Root-mean-square. <b>AVE</b> : Simple average.

### 5-3-2 Extended Menu Operations

In the extended menu, you can carry out the same operations as in the basic menu.

*For details of basic menu operation, see Section 5-2-2, “Basic Menu Operations” (page 5-3).*

#### Note

To access the extended menu, a setting on the internal SS-63 board is required.

*For details, refer to the Maintenance Manual (Part 1).*



## 6-1 Removing a Cassette When Tape Slack Occurs

If tape slack occurs in the unit, it is necessary to remove the upper lid and sound baffle. This job should always be entrusted to a technician who has undergone service training.

*For details, refer to Section 2-12, “How to Take Out the Cassette When the Tape is Slacking” in the Maintenance Manual (Part 1).*

## 6-2 Head Cleaning

To clean the video heads and audio heads, always use the special-purpose Sony BCT-5CLN cleaning cassette.

Follow the instructions with the cleaning cassette carefully, as inappropriate use of the cleaning cassette can damage the heads.

To carry out head cleaning, use the following procedure.

**1** Insert the cleaning cassette.

**2** Press the EJECT button and PLAY button simultaneously.

Head cleaning starts.

**3** After a head cleaning operation which lasts for about 5 seconds, the cleaning cassette is automatically ejected.

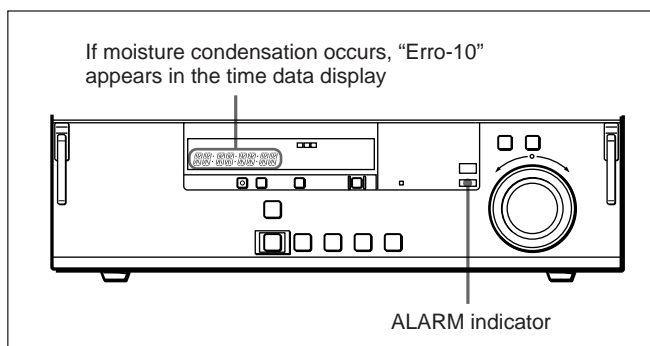
### Note

When carrying out head cleaning without using the automatic cleaning function described above, be sure to eject the cleaning cassette after use in order not to damage the heads.

## 6-3 Moisture Condensation

When the unit is suddenly moved from a cold to a warm location, or used in a very humid place, moisture from the air can condense on the head-drum. This is called moisture condensation. If the tape is run in this state, it can adhere to the drum. To prevent such a condition from occurring, the unit is provided with a moisture detecting function.

If moisture condenses on the head-drum while the unit is in use, “Erro-10” is displayed in the time data display.



If this happens, the drum and capstan motors stop and the cassette is automatically ejected. Then, the drum starts to rotate again to dry its surface. In this state, the unit is not operable. When the moisture has evaporated, the error message disappears and the ALARM indicator goes off.

### **If “Erro-10” appears and the ALARM indicator lights immediately after powering the unit on**

Leave the unit powered on and wait until the indicator goes off.

While the indicator is lit, you cannot insert a cassette. When the indicator goes off and the error message disappears, you can use the unit.

### **If you move the unit from a cold to a warm location**

Leave the unit powered off for about 10 minutes, in order to give the unit time to detect moisture condensation.

## 6-4 Digital Hours Meter

The hours meter can display eight items of information, in corresponding display modes, about the operational history of the unit. Use it as a guide in scheduling periodic maintenance.

### Display modes of the hours meter

#### H01: OPERATION mode

Displays the total number of hours the unit has been powered on in units of 1 hour.

#### H02: DRUM RUNNING mode

Displays the total number of hours the drum has run with tape threaded in units of 1 hour.

#### H03: TAPE RUNNING mode

Displays the total number of hours the unit has been in fast forward, rewind, playback, search, or editing (except for stop and still) mode in units of 1 hour.

#### H04: THREADING mode

Displays the total number of times tape has been threaded.

#### H12: DRUM RUNNING mode (resettable)

Same as H02 except that the count is resettable. This can be used as a guide in determining when to replace the drum.

#### H13: TAPE RUNNING mode (resettable)

Same as H03 except that the count is resettable. This can be used as a guide in determining when to replace such components as fixed heads and pinch rollers.

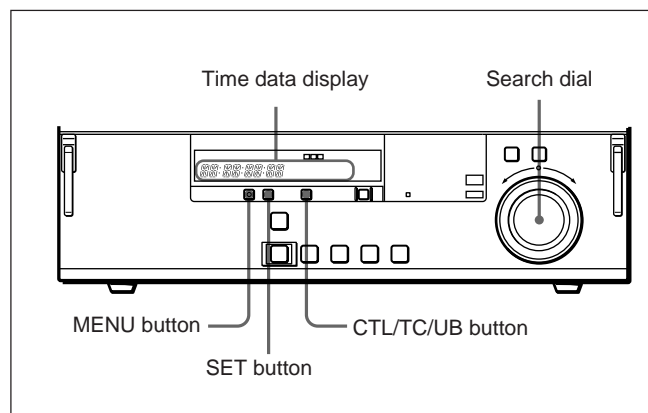
#### H14: THREADING mode (resettable)

Same as H04 except that the count is resettable. This can be used as a guide in determining when to replace, for example, the threading motor.

#### H15: AIR FILTER mode (resettable)

Displays the total number of hours the air filter has been in use with the tape deck cooling fan running since the count was last reset. This can be used as a guide in determining when to replace the air filter.

### Displaying the hours meter



#### To display the hours meter

Press the MENU button, then turn the search dial to display the required item in the time data display.

#### To jump to H01

Press the MENU button, then the CTL/TC/UB button. Every time you press the CTL/TC/UB button, menu item H01 or B01 is recalled alternately.

#### To exit from the hours meter

Press the MENU button or SET button.





# Specifications

## General

Recording format	Betacam SX
Power requirements	100 to 240 VAC, 50/60 Hz
Power consumption	190VA
Peak inrush current	(1) Power ON, current probe method: 23A (240V) (2) Hot switching inrush current, measured in accordance with European standard EN55103-1: 20A (230V)
Operating temperature	5°C to 40°C (41°F to 104°F)
Storage temperature	–20°C to +60°C (–4°F to +140°F)
Humidity	25 to 80%
Mass	32 kg (70 lb 8 oz)
Dimensions (w/h/d)	427 × 237 × 524 mm (16 <sup>7</sup> / <sub>8</sub> × 9 <sup>3</sup> / <sub>8</sub> × 20 <sup>3</sup> / <sub>4</sub> inches)

## Tape transport system

Tape speed	Betacam SX: 59.6 mm/s Analog Betacam: 118.6 mm/s (DNW-A22) 101.5 mm/s (DNW-A22P)
Digital playback time	184 minutes with BCT-184SXL
Analog Betacam playback time	90 minutes with BCT-90MLA
Fast forward/rewind time	Approx. 3 minutes with BCT-184SXL
Search speed	
Shuttle mode	Betacam SX: Still to approx. ±50 times normal playback speed Betacam playback: Still to ±35 times normal playback speed (DNW-A22) Still to ±42 times normal playback speed (DNW-A22P)
Jog mode	Still to ±1 times normal playback speed
Servo lock time	0.5 seconds or less (from standby on)
Load/unload time	6 seconds or less

## Cassette types

Betacam SX cassettes  
Betacam SP cassettes  
UVW cassettes

## Digital video system

### Digital video signal system

Sampling frequency	Y: 13.5 MHz R–Y/B–Y: 6.75 MHz
Quantization	8 bits/sample
Compression	Coefficient recording system
Channel coding	S-I-NRZI PR-IV
Error correction	Reed-Solomon code

### Analog composite output

Bandwidth	Y: 0 to 5.0 MHz +0.5 dB/ –2.0 dB
S/N ratio	54 dB or more
Differential gain	3% or less
Differential phase	3° or less
K factor (2T pulse)	1.5% or less
Y/C delay	20 ns or less

## Digital audio system

### Digital audio (CH-1 to CH-4) signal format

Sampling frequency	48 kHz (synchronized with video)
Quantization	16 bits/ sample
Wow and flutter	Below measurable level
Headroom	20 dB (or 18 dB, selectable)
Emphasis	T1= 50 μs, T2=15 μs

### Analog output

A/D, D/A quantization	16 bits/sample
Frequency response	20 Hz to 20 kHz +0.5 dB/ –1.0 dB (0 dB at 1 kHz)
Dynamic range	90 dB or more (at 1 kHz, emphasis on)
Distortion	0.05% or less (at 1 kHz, emphasis on, reference level (+4 dBm))
Crosstalk	–80 dB or less (at 1 kHz, between any two channels)

# Specifications

## Analog Betacam playback (DNW-A22)

### Video

Item		Metal tape	Oxide tape
Bandwidth (Luminance)		30 Hz to 4.1 MHz +0.5 dB/−6.0 dB	
S/N ratio	Luminance	49 dB or more	47 dB or more
	Chrominance (AM/PM)	51 dB or more/51 dB or more	50 dB or more/50 dB or more
K factor (2T pulse)		3% or less	
Differential gain		3% or less	
Differential phase		3° or less	
Y/C delay		20 ns or less	

### Audio (LNG)

Item		Metal tape	Oxide tape
Frequency response (at 10 dB below reference level <sup>a)</sup> )		50 Hz to 15 kHz +1.5 dB/ −3.0 dB	50 Hz to 15 kHz +3.0dB
S/N ratio (at 3% distortion level)		72 dB or more	50 dB or more (Dolby NR off)
Distortion (THD at 1kHz reference level <sup>a)</sup> )		1% or less	2% or less
Wow and flutter		0.1% rms or less	

a) Reference level: +4 dBm

## Analog Betacam playback (DNW-A22P)

### Video

Item		Metal tape	Oxide tape
Bandwidth	Luminance	25 Hz to 5.0 MHz +0.5 dB/−6.0 dB	25 Hz to 4.0 MHz +0.5 dB/−6.0 dB
	Chrominance	25 Hz to 1.5 MHz +0.5 dB/−3.0 dB	
S/N ratio	Luminance	47 dB or more	46 dB or more
	Chrominance (AM/PM)	48 dB or more/48 dB or more	48 dB or more/48 dB or more
K factor (2T pulse)		3% or less	
Differential gain		3% or less	
Differential phase		3° or less	
Y/C delay		20 ns or less	

### Audio (LNG)

Item		Metal tape	Oxide tape
Frequency response (at 20 dB below peak level <sup>a)</sup> )		50 Hz to 15 kHz +1.5 dB/−3.0 dB	50 Hz to 15 kHz ±3.0dB
S/N ratio (at 3% distortion level) (CCIR 468-3 weighted)		68 dB or more	62 dB or more
Distortion (THD at 1kHz reference level <sup>b)</sup> )		1% or less	2% or less
Wow and flutter (DIN45507 weighted)		0.1% rms or less	

a) Peak level: +8 dB above reference level

b) Reference level: +4 dBm

## Output connectors

## COMPOSITE VIDEO OUTPUT

BNC (2 including 1 usable for  
character superimposition)

1 Vp-p, 75  $\Omega$ , Sync negative

MONITOR OUTPUT (L/R)

XLR 3-pin, male (2)

+4 dBm at 60  $\Omega$  load, low  
impedance, balanced

PHONES JM-60 stereo phone jack

JM-60 stereo phone jack

$-\infty$  to  $-12$  dBu at  $8\ \Omega$  load,  
unblanced

## RF ADAPTOR

VIDEO	Usable for character
<p>1. <i>1941</i> (1979)</p> <p>2. <i>1950</i> (1979)</p> <p>3. <i>1960</i> (1979)</p> <p>4. <i>1970</i> (1979)</p> <p>5. <i>1980</i> (1979)</p> <p>6. <i>1990</i> (1979)</p> <p>7. <i>2000</i> (1979)</p> <p>8. <i>2010</i> (1979)</p> <p>9. <i>2020</i> (1979)</p> <p>10. <i>2030</i> (1979)</p> <p>11. <i>2040</i> (1979)</p> <p>12. <i>2050</i> (1979)</p> <p>13. <i>2060</i> (1979)</p> <p>14. <i>2070</i> (1979)</p> <p>15. <i>2080</i> (1979)</p> <p>16. <i>2090</i> (1979)</p> <p>17. <i>2100</i> (1979)</p> <p>18. <i>2110</i> (1979)</p> <p>19. <i>2120</i> (1979)</p> <p>20. <i>2130</i> (1979)</p> <p>21. <i>2140</i> (1979)</p> <p>22. <i>2150</i> (1979)</p> <p>23. <i>2160</i> (1979)</p> <p>24. <i>2170</i> (1979)</p> <p>25. <i>2180</i> (1979)</p> <p>26. <i>2190</i> (1979)</p> <p>27. <i>2200</i> (1979)</p> <p>28. <i>2210</i> (1979)</p> <p>29. <i>2220</i> (1979)</p> <p>30. <i>2230</i> (1979)</p> <p>31. <i>2240</i> (1979)</p> <p>32. <i>2250</i> (1979)</p> <p>33. <i>2260</i> (1979)</p> <p>34. <i>2270</i> (1979)</p> <p>35. <i>2280</i> (1979)</p> <p>36. <i>2290</i> (1979)</p> <p>37. <i>2300</i> (1979)</p> <p>38. <i>2310</i> (1979)</p> <p>39. <i>2320</i> (1979)</p> <p>40. <i>2330</i> (1979)</p> <p>41. <i>2340</i> (1979)</p> <p>42. <i>2350</i> (1979)</p> <p>43. <i>2360</i> (1979)</p> <p>44. <i>2370</i> (1979)</p> <p>45. <i>2380</i> (1979)</p> <p>46. <i>2390</i> (1979)</p> <p>47. <i>2400</i> (1979)</p> <p>48. <i>2410</i> (1979)</p> <p>49. <i>2420</i> (1979)</p> <p>50. <i>2430</i> (1979)</p> <p>51. <i>2440</i> (1979)</p> <p>52. <i>2450</i> (1979)</p> <p>53. <i>2460</i> (1979)</p> <p>54. <i>2470</i> (1979)</p> <p>55. <i>2480</i> (1979)</p> <p>56. <i>2490</i> (1979)</p> <p>57. <i>2500</i> (1979)</p> <p>58. <i>2510</i> (1979)</p> <p>59. <i>2520</i> (1979)</p> <p>60. <i>2530</i> (1979)</p> <p>61. <i>2540</i> (1979)</p> <p>62. <i>2550</i> (1979)</p> <p>63. <i>2560</i> (1979)</p> <p>64. <i>2570</i> (1979)</p> <p>65. <i>2580</i> (1979)</p> <p>66. <i>2590</i> (1979)</p> <p>67. <i>2600</i> (1979)</p> <p>68. <i>2610</i> (1979)</p> <p>69. <i>2620</i> (1979)</p> <p>70. <i>2630</i> (1979)</p> <p>71. <i>2640</i> (1979)</p> <p>72. <i>2650</i> (1979)</p> <p>73. <i>2660</i> (1979)</p> <p>74. <i>2670</i> (1979)</p> <p>75. <i>2680</i> (1979)</p> <p>76. <i>2690</i> (1979)</p> <p>77. <i>2700</i> (1979)</p> <p>78. <i>2710</i> (1979)</p> <p>79. <i>2720</i> (1979)</p> <p>80. <i>2730</i> (1979)</p> <p>81. <i>2740</i> (1979)</p> <p>82. <i>2750</i> (1979)</p> <p>83. <i>2760</i> (1979)</p> <p>84. <i>2770</i> (1979)</p> <p>85. <i>2780</i> (1979)</p> <p>86. <i>2790</i> (1979)</p> <p>87. <i>2800</i> (1979)</p> <p>88. <i>2810</i> (1979)</p> <p>89. <i>2820</i> (1979)</p> <p>90. <i>2830</i> (1979)</p> <p>91. <i>2840</i> (1979)</p> <p>92. <i>2850</i> (1979)</p> <p>93. <i>2860</i> (1979)</p> <p>94. <i>2870</i> (1979)</p> <p>95. <i>2880</i> (1979)</p> <p>96. <i>2890</i> (1979)</p> <p>97. <i>2900</i> (1979)</p> <p>98. <i>2910</i> (1979)</p> <p>99. <i>2920</i> (1979)</p> <p>100. <i>2930</i> (1979)</p> <p>101. <i>2940</i> (1979)</p> <p>102. <i>2950</i> (1979)</p> <p>103. <i>2960</i> (1979)</p> <p>104. <i>2970</i> (1979)</p> <p>105. <i>2980</i> (1979)</p> <p>106. <i>2990</i> (1979)</p> <p>107. <i>3000</i> (1979)</p> <p>108. <i>3010</i> (1979)</p> <p>109. <i>3020</i> (1979)</p> <p>110. <i>3030</i> (1979)</p> <p>111. <i>3040</i> (1979)</p> <p>112. <i>3050</i> (1979)</p> <p>113. <i>3060</i> (1979)</p> <p>114. <i>3070</i> (1979)</p> <p>115. <i>3080</i> (1979)</p> <p>116. <i>3090</i> (1979)</p> <p>117. <i>3100</i> (1979)</p> <p>118. <i>3110</i> (1979)</p> <p>119. <i>3120</i> (1979)</p> <p>120. <i>3130</i> (1979)</p> <p>121. <i>3140</i> (1979)</p> <p>122. <i>3150</i> (1979)</p> <p>123. <i>3160</i> (1979)</p> <p>124. <i>3170</i> (1979)</p> <p>125. <i>3180</i> (1979)</p> <p>126. <i>3190</i> (1979)</p> <p>127. <i>3200</i> (1979)</p> <p>128. <i>3210</i> (1979)</p> <p>129. <i>3220</i> (1979)</p> <p>130. <i>3230</i> (1979)</p> <p>131. <i>3240</i> (1979)</p> <p>132. <i>3250</i> (1979)</p> <p>133. <i>3260</i> (1979)</p> <p>134. <i>3270</i> (1979)</p> <p>135. <i>3280</i> (1979)</p> <p>136. <i>3290</i> (1979)</p> <p>137. <i>3300</i> (1979)</p> <p>138. <i>3310</i> (1979)</p> <p>139. <i>3320</i> (1979)</p> <p>140. <i>3330</i> (1979)</p> <p>141. <i>3340</i> (1979)</p> <p>142. <i>3350</i> (1979)</p> <p>143. <i>3360</i> (1979)</p> <p>144. <i>3370</i> (1979)</p> <p>145. <i>3380</i> (1979)</p> <p>146. <i>3390</i> (1979)</p> <p>147. <i>3400</i> (1979)</p> <p>148. <i>3410</i> (1979)</p> <p>149. <i>3420</i> (1979)</p> <p>150. <i>3430</i> (1979)</p> <p>151. <i>3440</i> (1979)</p> <p>152. <i>3450</i> (1979)</p> <p>153. <i>3460</i> (1979)</p> <p>154. <i>3470</i> (1979)</p> <p>155. <i>3480</i> (1979)</p> <p>156. <i>3490</i> (1979)</p> <p>157. <i>3500</i> (1979)</p> <p>158. <i>3510</i> (1979)</p> <p>159. <i>3520</i> (1979)</p> <p>160. <i>3530</i> (1979)</p> <p>161. <i>3540</i> (1979)</p> <p>162. <i>3550</i> (1979)</p> <p>163. <i>3560</i> (1979)</p> <p>164. <i>3570</i> (1979)</p> <p>165. <i>3580</i> (1979)</p> <p>166. <i>3590</i> (1979)</p> <p>167. </p>	

Usable for character  
superimposition

DC                      5 VDC

5 VDC

AUDIO -10 dBu at 10 k $\Omega$  load, unbalanced

–10 dBu at 10 k $\Omega$  load, unbalanced

## Remote connectors

RS232C D-sub 25-pin, female

D-sub 25-pin, female

### Accessories supplied

PSW 4 × 16 screws for rack mounting (4)

Operation Manual (1)

Maintenance Manual Part 1 (1)

## Optional accessories

## RMM-110/111 Rack Mount Adaptor

## BCT-5CLN Cleaning Cassette Tape

Design and specifications are subject to change without notice.



このマニュアルに記載されている事柄の著作権は当社にあり、説明内容は機器購入者の使用を目的としています。  
従って、当社の許可なしに無断で複写したり、説明内容（操作、保守等）と異なる目的で本マニュアルを使用することを禁止します。

The material contained in this manual consists of information that is the property of Sony Corporation and is intended solely for use by the purchasers of the equipment described in this manual.

Sony Corporation expressly prohibits the duplication of any portion of this manual or the use thereof for any purpose other than the operation or maintenance of the equipment described in this manual without the express written permission of Sony Corporation.

Le matériel contenu dans ce manuel consiste en informations qui sont la propriété de Sony Corporation et sont destinées exclusivement à l'usage des acquéreurs de l'équipement décrit dans ce manuel.

Sony Corporation interdit formellement la copie de quelque partie que ce soit de ce manuel ou son emploi pour tout autre but que des opérations ou entretiens de l'équipement à moins d'une permission écrite de Sony Corporation.

Das in dieser Anleitung enthaltene Material besteht aus Informationen, die Eigentum der Sony Corporation sind, und ausschließlich zum Gebrauch durch den Käufer der in dieser Anleitung beschriebenen Ausrüstung bestimmt sind. Die Sony Corporation untersagt ausdrücklich die Vervielfältigung jeglicher Teile dieser Anleitung oder den Gebrauch derselben für irgendeinen anderen Zweck als die Bedienung oder Wartung der in dieser Anleitung beschriebenen Ausrüstung ohne ausdrückliche schriftliche Erlaubnis der Sony Corporation.

